

O P E R A T O R ' S   M A N U A L

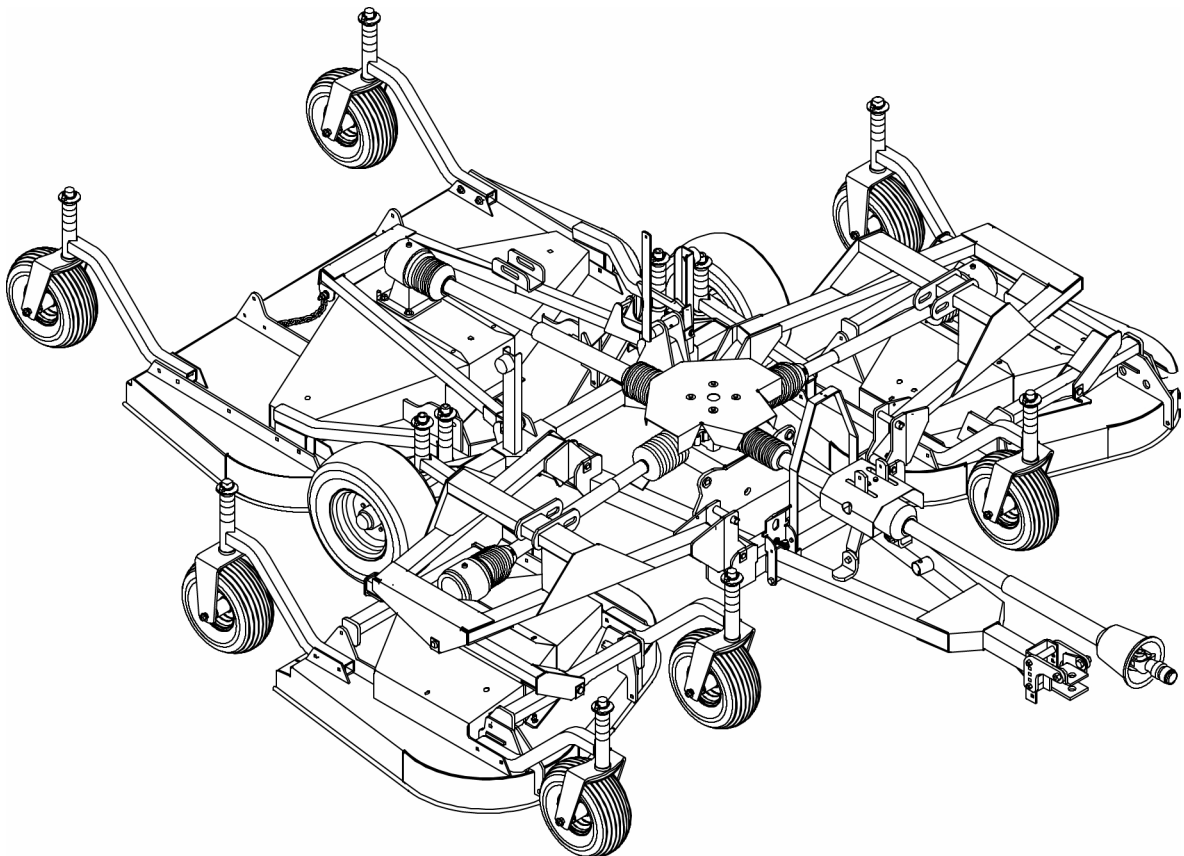
# GROOMING MOWERS

**FM1012**

**FM1015**

**FM1017**

**REAR DISCHARGE**



**FRONTIER**  
EQUIPMENT™

## TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Frontier dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Product Registration form, located on the Frontier website. **Failure to complete and return the form does not diminish customer's warranty rights.**

## TO THE OWNER:

Read this manual before operating your Frontier equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Frontier dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Frontier service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

**Model:** \_\_\_\_\_ **Date of Purchase:** \_\_\_\_\_

**Serial Number: (see Safety Decal section for location)** \_\_\_\_\_

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**IMPORTANT  
or NOTICE**

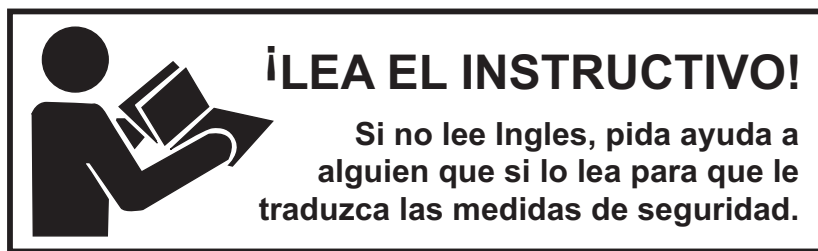
Is used to address practices not related to personal injury.

**NOTE**

Indicates helpful information.

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This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

# SPECIFICATIONS

<b><u>MODEL</u></b>	<b><u>FM1012</u></b>	<b><u>FM1015</u></b>	<b><u>FM1017</u></b>
Cutting Width	12' (3.66 m)	15' (4.57 m)	17' (5.18 m)
Cutting Height Range	1.0" - 5.0" (25 - 127 mm)	1.0" - 5.0" (25 - 127 mm)	1.0" - 5.0" (25 - 127 mm)
Shipping Weight (Approximately)	2,900 lbs. (1315 kg)	3,200 lbs. (1452 kg)	3,340 lbs. (1515 kg)
Blade Speed (feet per minute)	16,950	16,950	16,950
Blade Spindles	7	9	9
Number of Blades	7	9	9
Universal Drive Series	(Input: ASAE Cat 4; Wing: ASAE Cat 3)		
Transport Wheels	20.5" x 8.0" - 10	20.5" x 8.0" - 10	20.5" x 8.0" - 10
Caster Wheels	15" x 6.00" - 6	15" x 6.00" - 6	15" x 6.00" - 6
Tractor PTO Speed	540 rpm	540 rpm	540 rpm
Recommended Minimum Tractor Horsepower	30 hp	35 hp	40 hp

## GENERAL INFORMATION

### **WARNING**

■ Some illustrations in this manual show the equipment with safety shields removed to provide a better view. This equipment should never be operated with any necessary safety shielding removed.

The purpose of this manual is to assist you in operating and maintaining your Flex Wing Mower. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance.

These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature, due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the tractor facing the direction of forward travel. Blade rotation is counter-clockwise as viewed from the top of the mower.





# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

## **TRAINING**

■ **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer.) Failure to follow instructions or safety rules can result in serious injury or death.**

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.**

■ **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

## **PREPARATION**

■ **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**

■ **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

■ **Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

■ **When attaching a pull-type unit to the tractor drawbar, always use a high-strength drawbar pin. The drawbar pin must have a device that will lock it into position. Secure safety chain to attachment and tractor.**

■ **Make sure attachment is properly secured, adjusted, and in good operating condition.**

■ **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**

■ **Make sure driveline guard tether chains are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.**

■ **Before starting the power unit, check all equipment driveline guards for damage. Replace any damaged guards. Make sure all guards rotate freely on all drivelines. If guards do not rotate freely on drivelines, repair and replace bearings before putting equipment into service.**

*(Safety Rules continued on next page)*



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Inspect chain shielding before each use. Replace if damaged.
- Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.
- Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.
- Make test turns, both left and right. Check that both the hydraulic hose and the mower transport lock release rope do not become taut or caught on any parts of the tractor or mower.

## TRANSPORTATION

- The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum transport speed. Doing so could result in:
  - Loss of control of the implement and tractor
  - Reduced or no ability to stop during braking
  - Implement tire failure
  - Damage to the implement or its components.
- Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.
- Do not operate PTO during transport.

- Never tow this implement with a motor vehicle.

## OPERATION

- Only engage power when equipment is at ground operating level. Always disengage power when equipment is raised off the ground.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.
  - If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
  - This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).
- Never direct discharge toward people, animals, or property.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.

*(Safety Rules continued on next page)*



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- Operate tractor PTO at 540 RPM. Do not exceed.
- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.
- Before raising or lowering wings, front hitch/lift and rear wheel/lift cylinders must be fully extended and all four cylinder locks installed. This prevents rotor and bearing support damage that can result from ground contact.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always connect safety chain from equipment to towing vehicle when transporting.

## **MAINTENANCE**

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before working underneath, carefully read Operator’s Manual instructions, disconnect driveline, raise mower, securely block up all corners with jackstands, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failures, or mechanical component failures.

- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- To prevent contamination, clean and then cover hose ends, fittings, and motor ports with tape.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.
- Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

*(Safety Rules continued on next page)*



## SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.
- Wear gloves when installing belt. Be careful to prevent fingers from being caught between belt and pulley.
- Use care when installing or removing belt from spring-loaded idler. Springs store energy when

extended and, if released suddenly, can cause personal injury.

### STORAGE

- Block equipment securely for storage.
- Keep children and bystanders away from storage area.



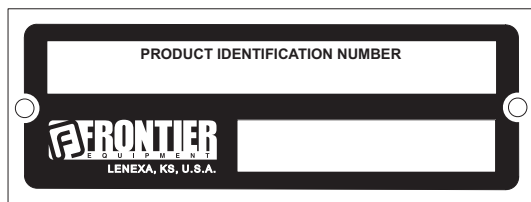


# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



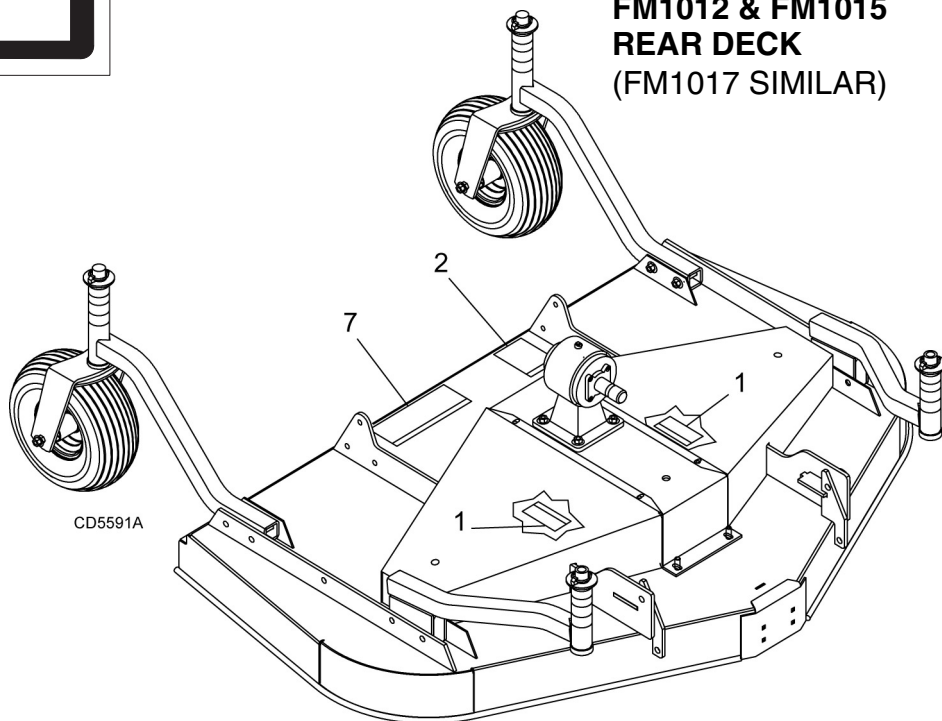
**Replace Immediately If Damaged!**



**5 - Serial Number Plate**

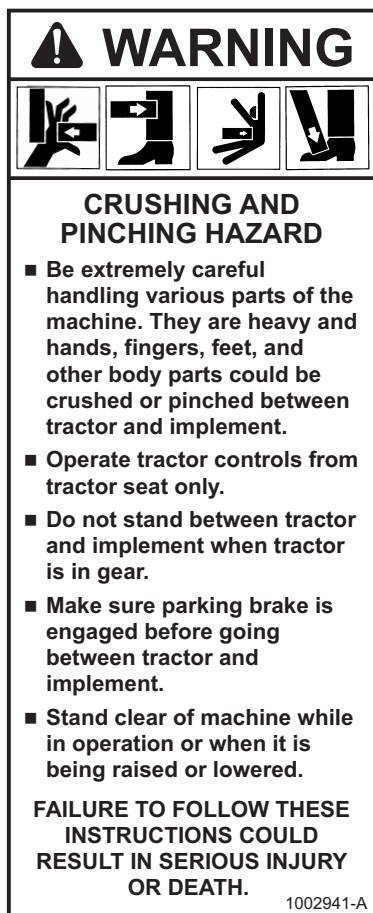


**1 - 5WP18867**



**FM1012 & FM1015  
REAR DECK  
(FM1017 SIMILAR)**

**18 - 5WP1002941**



**4 - 5WP33347**



**2 - 5WP15503**



*(Safety Decals continued on next page)*





# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
**Replace Immediately If Damaged!**



(Safety Decals continued from previous page)

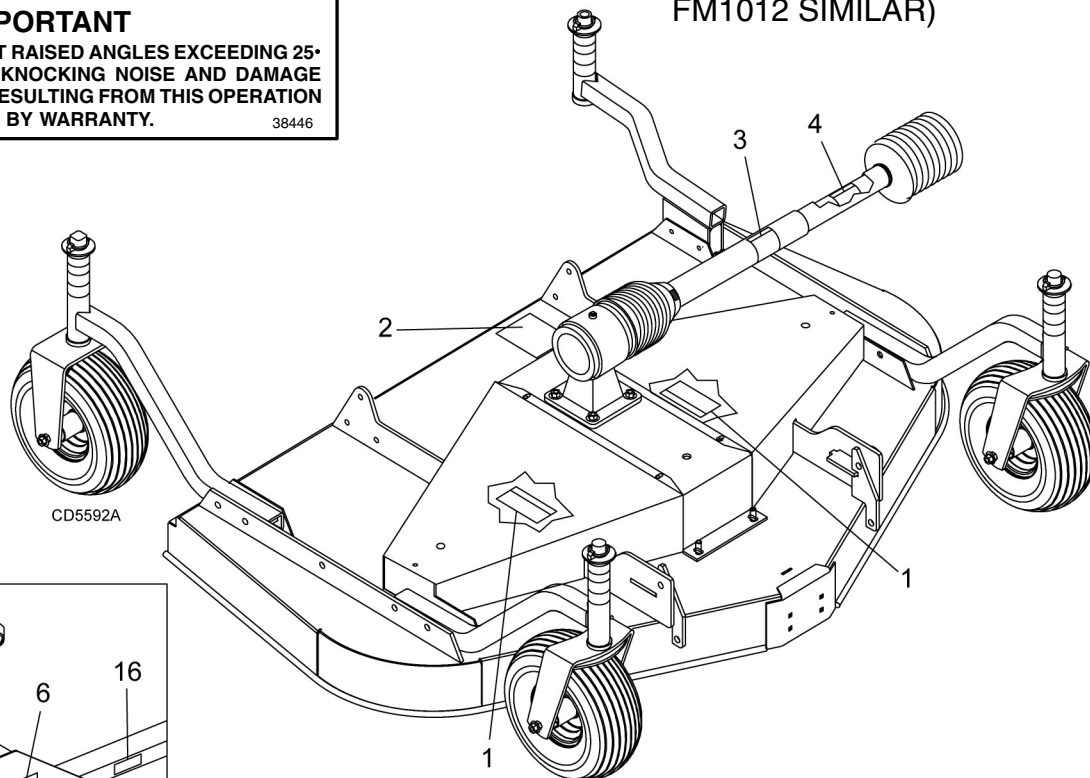
## IMPORTANT

OPERATING MOWERS AT RAISED ANGLES EXCEEDING 25° WILL CREATE U-JOINT KNOCKING NOISE AND DAMAGE DRIVELINE. FAILURES RESULTING FROM THIS OPERATION WILL NOT BE COVERED BY WARRANTY.

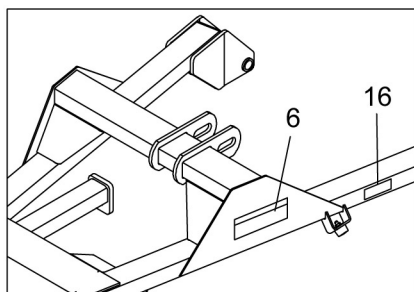
38446

16 - 5WP38446

**FM1015 & FM1017 WING**  
(RIGHT WING SHOWN;  
FM1012 SIMILAR)



CD5592A



9 - 5WP18865

3 - 5WP18864



## DANGER



**ROTATING DRIVELINE  
CONTACT CAN CAUSE DEATH  
KEEP AWAY!**

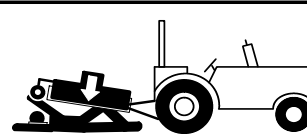
**DO NOT OPERATE WITHOUT -**

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline

18864-C



## WARNING



### FALLING OFF CAN RESULT IN BEING RUN OVER.

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

### RAISED EQUIPMENT CAN DROP AND CRUSH.

- Before working underneath, follow all instructions and safety rules in operator's manual and securely block up all corners of equipment with jack stands.
- Securely blocking prevents equipment dropping from hydraulic leak-down, hydraulic system failures or mechanical component failures.

**FALLING OFF OR FAILING TO BLOCK SECURELY CAN  
RESULT IN SERIOUS INJURY OR DEATH.**

18865-C

(Safety Decals continued on next page)




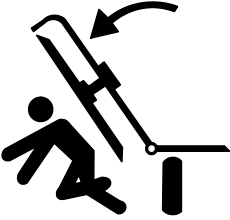
# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
**Replace Immediately If Damaged!**



(Safety Decals continued from previous page)

6 - 5WP38421

 <b>WARNING</b>	
	<p><b>RAISED MOWER CAN DROP AND CRUSH</b></p> <ul style="list-style-type: none"><li>■ Before working underneath side mowers, lower side mowers and securely block up. See manual.</li><li>■ Blocking up prevents mower dropping from transport latch release or failure, hydraulic leak down or hydraulic system failure.</li></ul> <p><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>


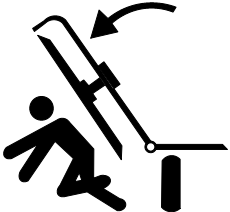
7 - 5WP44650

 <b>WARNING</b>	
	<p><b>RAISED MOWER CAN DROP AND CRUSH</b></p> <ul style="list-style-type: none"><li>■ Before working underneath rear mower:<ul style="list-style-type: none"><li>■ Raise rear mower to transport position.</li><li>■ Insert pin to lock transport latch.</li><li>■ Securely block up rear of mower. See manual.</li></ul></li><li>■ Blocking up prevents mower dropping from transport latch release or failure, hydraulic leak down, or hydraulic system failures.</li></ul> <p><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>

PIN STORAGE POSITION

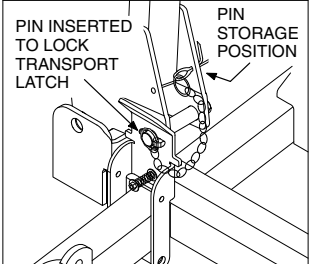


PIN INSERTED TO LOCK TRANSPORT LATCH

 <b>WARNING</b>	
	<p><b>RAISED MOWERS CAN DROP AND CRUSH</b></p> <ul style="list-style-type: none"><li>■ Keep away. Do not go underneath.</li><li>■ When raised, insert pins to lock transport latches.</li><li>■ Lower after transport.</li></ul> <p><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>

PIN INSERTED TO LOCK TRANSPORT LATCH


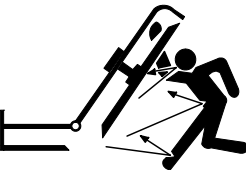
PIN STORAGE POSITION



**SIDE MOWER TRANSPORT LATCHES**

11 - 5WP44651

17 - 5WP44656

 <b>WARNING</b>	
	<p><b>RAISED MOWERS EXPOSE BLADES AND INCREASE THROWN OBJECT HAZARDS</b></p> <ul style="list-style-type: none"><li>■ Only raise for transport.</li><li>■ Stop mowers before raising.</li></ul> <p><b>FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</b></p>

8 - 5WP18866

 <b>WARNING</b>
<p><b>DO NOT EXCEED PTO SPEED OF 540 RPM</b></p> <p>PTO speeds higher than 540 RPM can cause equipment failure and personal injury.</p>

(Safety Decals continued on next page)



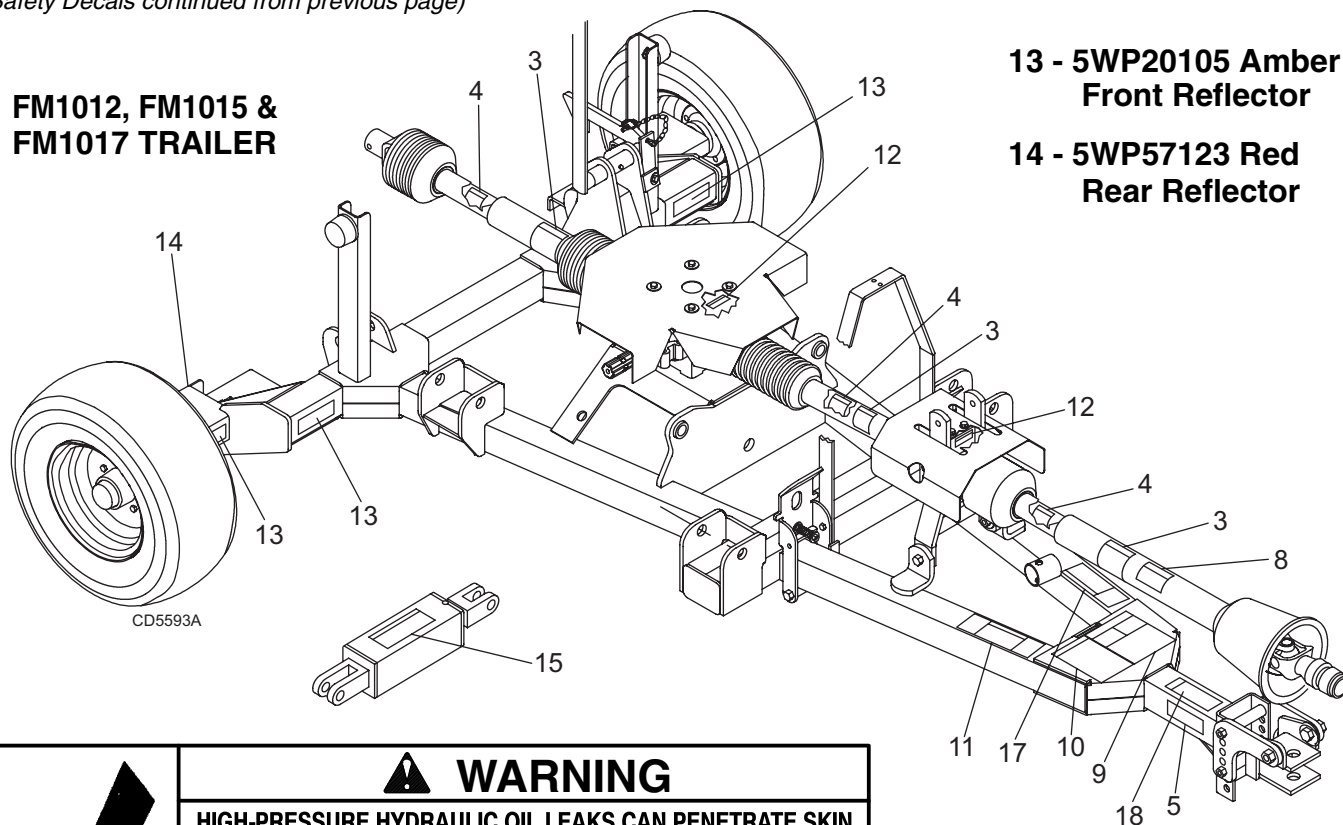
# SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**  
**Replace Immediately If Damaged!**



(Safety Decals continued from previous page)

**FM1012, FM1015 &  
FM1017 TRAILER**



**13 - 5WP20105 Amber  
Front Reflector**

**14 - 5WP57123 Red  
Rear Reflector**



19924-B



## WARNING

**HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN  
RESULTING IN SERIOUS INJURY, GANGRENE OR DEATH.**

- Check for leaks with cardboard; never use hand.
- Before loosening fittings: lower load, release pressure, and be sure oil is cool.
- Consult physician immediately if skin penetration occurs.

**15 - 5WP19924**



## WARNING

**TO AVOID SERIOUS INJURY OR DEATH:**

- Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
- Never allow riders.
- Keep bystanders away from equipment during operation.
- Operate from tractor seat only.
- Keep all shields in place and in good condition.
- Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
- Never allow children or untrained persons to operate equipment.
- Do not transport towed or semi-mounted units over 20 MPH.

**FAILURE TO FOLLOW THESE INSTRUCTIONS  
CAN RESULT IN INJURY OR DEATH.**

1002423-B

**10 - 5WP1002423**



## DANGER

**SHIELD MISSING  
DO NOT OPERATE - PUT SHIELD ON**

18869-B

**12 - 5WP18869**

## BE CAREFUL!

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replacement safety decals can be ordered free from your dealer.



# OPERATION

The operator is responsible for the safe operation of the cutter. The operator must be properly trained. Operators should be familiar with the cutter, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on pages 5 to 12.

This mower is designed for lawn and grass mowing. It is not designed for rough conditions or heavy weed mowing. It is equipped with suction type blades for best results in lawn mowing.

Recommended mowing speed for most conditions is from 2 to 5 mph (3 - 8 km/h).

## DANGER

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

## WARNING

- Never allow children or untrained persons to operate equipment.
- Keep bystanders away from equipment.
- Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- Operate tractor PTO at 540 RPM. Do not exceed.

## CAUTION

- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## ATTACHING MOWER TO TRACTOR

### WARNING

- Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Never attach the mower release rope to the operator, the operator's clothing, or the tractor seat.

1. Park the mower and tractor on a level, hard-surfaced area.
2. Adjust tractor hitch bracket on trailer frame so the trailer is level when attached to the tractor. Pin the mower to the tractor.

**NOTE:** When attaching mower to tractor drawbar, make sure the correct drawbar pin is used. A Category 1 drawbar is 1" (25.4 mm); Category 2 is 1.25" (31.75 mm). Failure to use the correct pin size will result in premature wear of hitch and drawbar hole. If the hitch on the mower doesn't match your tractor drawbar, contact your dealer to order the correct size hitch for your tractor. If not removing mower from tractor on a regular basis, a bolt, locknut, and washers assembled tightly will reduce wear on drawbar and hitch.

A 1-3/8" 6B spline PTO shaft is used for connecting the mower to the tractor. This mower is designed for 540 rpm PTO only.

The PTO drive shaft is intended for use with tractors that have 14 inches (356 mm) between the end of the PTO shaft and the tractor's drawbar hitch pin hole.

3. Attach the safety chain to the tractor as shown in Figure 1.

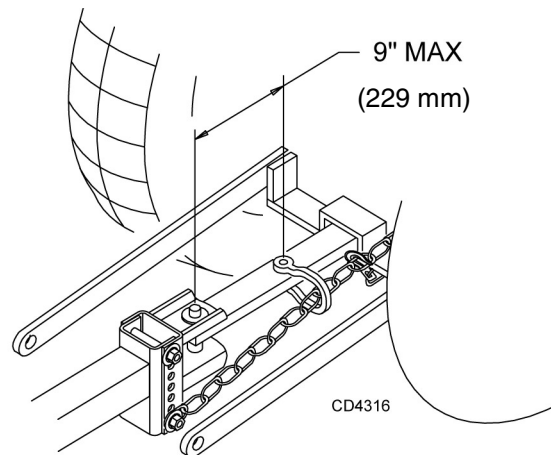


Figure 1. Tow Chain Installation

4. Attach the mower drive shaft to tractor PTO. Make sure the lock collar engages securely.
5. Attach the end of the mower transport's lock release rope to a location on the tractor within easy reach of the operator.

**NOTE:** When routing the rope, do not route through the hydraulic hose guide and do not allow rope slack to drop between the driveline shields and the gearbox rotating shafts.

## **CV DRIVELINE TURNING LIMITS**

### ***NOTICE***

■ **Do not exceed turning angle of 80 degrees at the head of the Constant Velocity (CV) driveline or damage will occur.**

Check for excessive turn angle:

1. Disconnect the driveline from the tractor.
2. Start engine and turn as far right or left as possible.
3. Shut off the engine and connect the CV driveline to the tractor. If it cannot be connected, the turn angle is too severe.
4. Restart the tractor and straighten the angle slightly.
5. Shut off the engine and connect the CV driveline to tractor.
6. Repeat the process until the driveline can be connected. The point at which the driveline can be connected is the maximum turn that can be made.

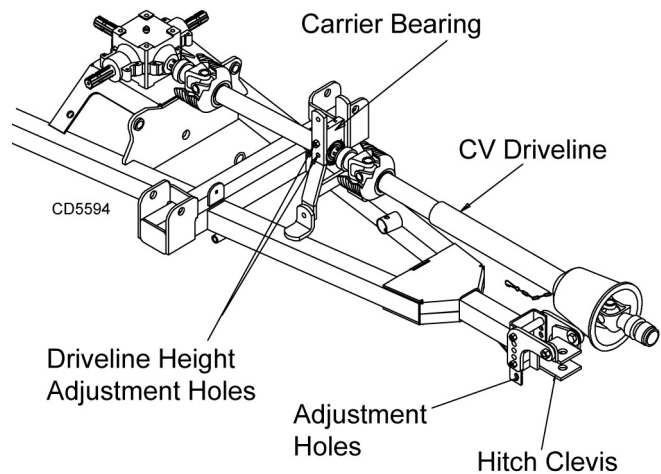
## **LEVELING MOWER**

**NOTE:** To ensure satisfactory mower performance, the trailer frame and decks must be leveled before operating the mower. During normal operation the mower should be leveled twice each season. The mower must be leveled each time a tractor with a different drawbar height is used.

Follow this procedure to level the flex mower for operation:

1. Park the tractor and mower on a flat level surface with the decks in mowing position.
2. Inflate all tires to the recommended pressure: 70 psi (483 kPa) for trailer tires and 30 psi (207 kPa) for deck gauge tires.
3. Level the trailer frame by adjusting the hitch. (See Figure 2.)
4. Remove the hitch clevis from the trailer frame and pin to the tractor drawbar.
5. Use the parking jack to adjust the trailer frame to the level position. Align the nearest hitch adjustment hole in the hitch clevis with a hole in the trailer frame.

6. Tighten the hardware to specifications in the Bolt Torque Chart on page 57. Frame level must be readjusted each time the drawbar height changes.
7. Attach the mower and the driveline to the tractor. Level the driveline by placing a bolt through the carrier bearing and the driveline height adjustment holes.



**Figure 2.** Level Trailer Frame

## **CUTTING HEIGHT ADJUSTMENT**

### **WARNING**

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

■ **Before working underneath, carefully read Operator's Manual instructions, disconnect driveline, raise mower, securely block up all corners with jackstands, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failures, or mechanical component failures.**

### ***NOTICE***

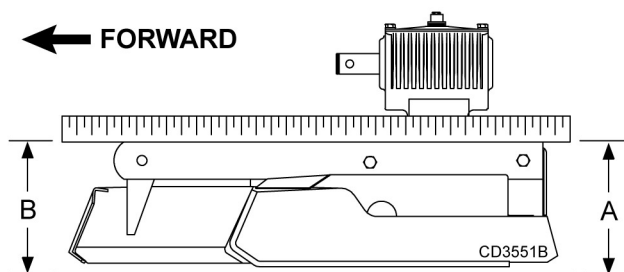
■ **Avoid low cutting heights. Striking the ground with blades produces one of the most damaging shock loads a mower can encounter. Allowing blades to contact ground repeatedly will cause damage to mower and drive.**

1. Level mower from side to side. Check by measuring from mower frame to the ground at each deck rail.
2. Verify that the same amount of spacers are under all caster arms.
3. Loosen cap screws that attach caster arm assembly to deck.
4. Set mower on the ground.

5. Retighten cap screws. This equalizes the clearance in the bolt holes.
6. Best mowing results will be obtained with front of mower level with, or slightly lower than, the rear.
7. Cutting height is controlled with front and rear caster wheel adjustment.
8. To raise rear of mower, move caster adjustment spacers under caster arms.
9. To raise front of mower, move spacers under front caster wheel arms.

**Table 1: Cutting Height Chart**

Spacers Required Under Caster Arm Pivot Tube			
Cut Height	1/2" Spacer	3/4" Spacer	1" Spacer
1" (25 mm)			
1-1/2" (38 mm)	1		
2" (51 mm)			1
2-1/2" (64 mm)	1		1
3" (76 mm)			2
3-1/2" (89 mm)	1		2
4" (102 mm)	1	2	1
4-1/2" (114 mm)		2	2
5" (127 mm)	1	2	2



**Figure 3. Cutting Height Adjustment**

Remember, measurement at location A, Figure 3, should not be less than location B and should not be over 1/2" (13 mm) greater than location B.

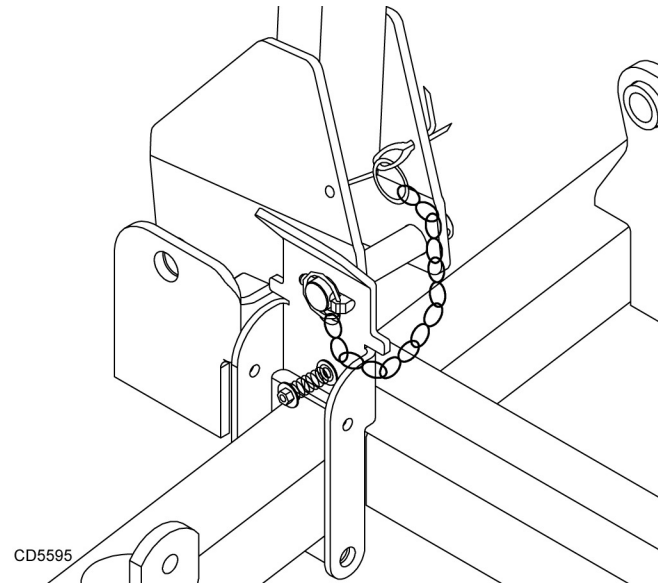
## **TRANSPORTING**

When transporting the mower short distances, raise the wings and the rear deck until all three transport locks engage automatically.

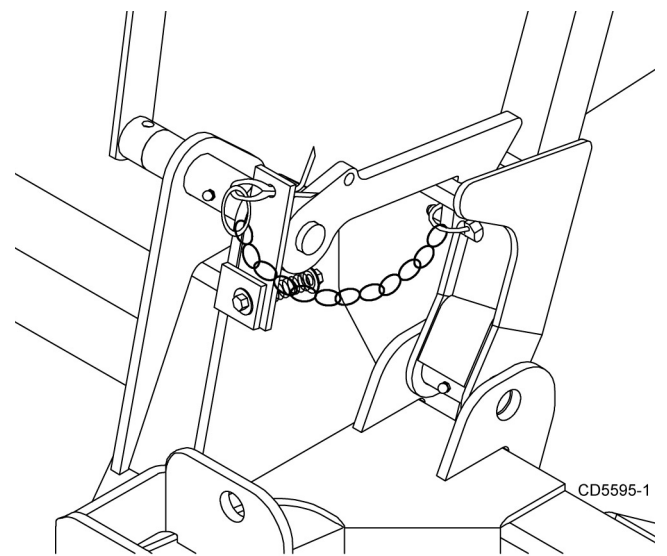
Install locking pins to secure the mower wings for transport as shown in Figure 4 and Figure 5.

To lower the wings and the rear deck:

1. Remove the locking pins and store in holes provided.
2. Slightly raise the wings and rear deck to take pressure off the locking mechanisms.
3. Pull the transport lock release rope to disengage the locks. Lower the wings and rear deck and release the rope.



**Figure 4. Lock Pin Installed (Right Wing)**



**Figure 5. Lock Pin Installed (Rear Deck)**

## **STARTING AND STOPPING MOWER**

### **WARNING**

- Do not operate PTO during transport.
- Never direct discharge toward people, animals, or property.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.

### **CAUTION**

- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.

Power for operating the mower is supplied from the tractor PTO. Refer to your tractor manual for instructions on engaging and disengaging the PTO.

Operate PTO at 540 rpm. Know how to stop tractor and mower quickly in case of an emergency.

If the mower becomes plugged causing the belt to slip for over two seconds, follow these steps:

1. Raise mower just enough to clear accumulated material.
2. Continue running at least two minutes, allowing pulleys to cool.

### **NOTICE**

- Stopping the mower with belt in contact with a very hot pulley will bake and ruin belt.

To reduce the risk of thrown objects, do not raise the mower higher than necessary.

## **OPERATING**

### **WARNING**

- Do not operate mowers on terrain that raises mowers beyond 25 degrees. Exceeding this design limit will result in U-joint “knocking noise” and potential driveline failure and could cause driveline to pull apart.

When engaging the PTO, engine rpm should always be low. Once engaged and ready for mowing, increase PTO speed to 540 rpm and maintain speed throughout the cutting operation.

Mower vibration tends to loosen bolts. All hardware should be checked regularly to maintain proper torque. Each time the mower is used, check all hardware to be sure it is secure.

The condition of the terrain will determine cutting results. For best results, mower blades should be kept sharp at all times and the platform as level as possible. When mower blades show excessive wear, they should be replaced.

## **Operating Technique**

### **CAUTION**

- Stop power unit and implement immediately upon striking an obstruction. Dismount power unit, using proper procedure. Inspect and repair any damage before resuming operation.

Proper ground speed will depend upon the terrain, the height, type, and density of material to be cut.

Normally, ground speed will range from two to five mph. Tall dense material should be cut at a low speed; thin medium-height material can be cut at a faster ground speed.

Always operate tractor PTO at 540 rpm to maintain proper blade speed and produce a clean cut.

Under certain conditions, tractor tires may roll some grass down and prevent it from being cut at the same height as the surrounding area. When this occurs, reduce your ground speed, but maintain PTO at 540 rpm. The lower ground speed will permit grass to partially rebound.

In general, lower cutting heights give a more even cut with less tendency to leave tire tracks. However, it is better to cut grass frequently rather than too short. Short grass deteriorates rapidly in hot weather and invites weed growth during growing seasons. Follow local recommendations for the suitable cutting height in your area.

## **Operating Tips**

### **WARNING**

- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.

Extremely tall material should be cut twice. Set mower at a higher cutting height for the first pass. Then cut at desired height 90 degrees to the first pass.

Remember, sharp blades produce cleaner cuts and require less power.

Analyze area to be cut to determine the best procedure. Consider height and type of grass and terrain type: hilly, level, or rough.

Plan your mowing pattern to travel straight forward whenever possible. Mow with uncut grass to the right. This will distribute the clippings over the cut area.

## Uneven Terrain



### WARNING

- **Do not operate or transport on steep slopes.**
- **Do not stop, start, or change directions suddenly on slopes.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain during operation.**

In extremely uneven terrain, rear wheel weights, front tractor weights and/or front tire ballast should be used to improve stability.

Pass diagonally through sharp dips and avoid sharp drops to prevent hanging up the tractor and the mower. Practice will improve your skills in maneuvering rough terrain.

Avoid sudden starts and stops when traveling up or down hill.

Always mow down slopes, never up or across the face. Avoid operating on steep slopes.

Slow down on sharp turns and slopes to prevent tipping and losing control.

## REMOVING MOWER FROM TRACTOR

1. Park the unit on a level, hard surface with the wings and rear deck fully lowered to the ground.
2. Block the wheels to keep the mower from rolling when unhitched from tractor.
3. Attach the jack to the side of the tongue and adjust the height to take the weight off the tractor hitch.
4. Disconnect the PTO shaft and the hydraulic hose, untie the mower transport lock release rope from the tractor, and remove the hitch pin.
5. Store the PTO shaft end and the hydraulic hose couplings off the ground and keep them clean.

## **OWNER PRE-OPERATION CHECK LIST**

### (OWNER'S RESPONSIBILITY)

- \_\_\_ Review and follow all safety rules and safety decal instructions on pages 5 through 12.
- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that all shields and guards are properly installed and in good condition. Replace if damaged.
- \_\_\_ Check that chain shielding is in good condition and replace any damaged chain links.
- \_\_\_ Check that all hardware and cotter pins are properly installed and secured.
- \_\_\_ Check to ensure blades are sharp, in good condition, and installed correctly. Replace if damaged.
- \_\_\_ Check that equipment is properly and securely attached to tractor.
- \_\_\_ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- \_\_\_ Make sure the driveline guards and tether chains are in good condition. Guards must rotate freely on driveline. Fasten tether chains, as instructed, to the tractor and the equipment.
- \_\_\_ Inspect area and remove stones, branches or other hard objects that might be thrown, causing injury or damage.
- \_\_\_ Do not allow riders.
- \_\_\_ Check all lubrication points and grease as instructed in Lubrication Information, page 20. Make sure the PTO slip joint is lubricated and that the gearbox fluid levels are correct.
- \_\_\_ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- \_\_\_ Make sure tractor ROPS or ROPS CAB and seat belt are in good condition. Keep seat belt securely fastened during operation.
- \_\_\_ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.

# NOTES



# OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

## WARNING

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

■ Do not disconnect hydraulic lines until engine is stopped, power unit is properly secured, equipment and all components are lowered to the ground, and system pressure is released by operating all valve control levers.

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

## DANGER

■ Full chain shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing

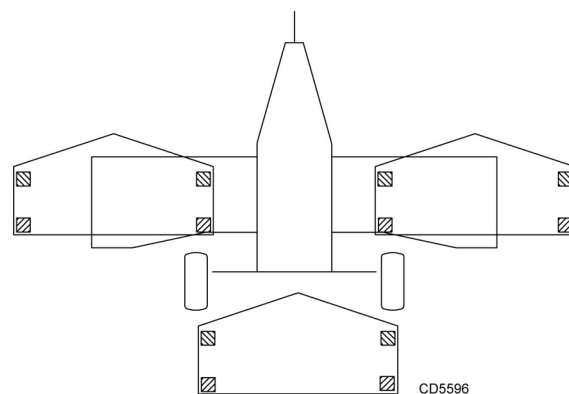
**condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).**

## CAUTION

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

## **BLOCKING METHOD**

The only approved blocking devices for this mower are jackstands with a load rating of 1,000 pounds (454 kg) or more. Twelve jackstands, located as shown in Figure 6, must be installed before working underneath this unit.



**Figure 6.** Jackstand Placement

Do not work underneath mower unless it is properly attached to tractor and blocked securely. When properly attached, the unit will be anchored to minimize front to rear movement.

Before blocking, be sure that the mower is securely attached to the tractor. Lower mower units to the ground. Raise the mower units as needed for working room and securely block them. Set tractor brakes, turn engine off and remove key, then disconnect mower driveline.

When blocking, you must consider the overall stability of the unit. Just placing jack stands under the unit will not ensure your safety. The working surface must be level and solid to support the loaded weight of the jack stands. Ensure that jackstands are stable at both top and bottom. Before working under any portion of the mower, test the stability of your blocking with the full weight of the mower units lowered onto the jackstands.

## LUBRICATION INFORMATION

### **! CAUTION**

■ **When lubricating telescoping PTO drives, keep fingers out of shield access slots to prevent injury.**

Remove belt shields and clean out all accumulated grass, dirt and other debris. Heat created by grass build-up can cause belt failure or fires to ignite.

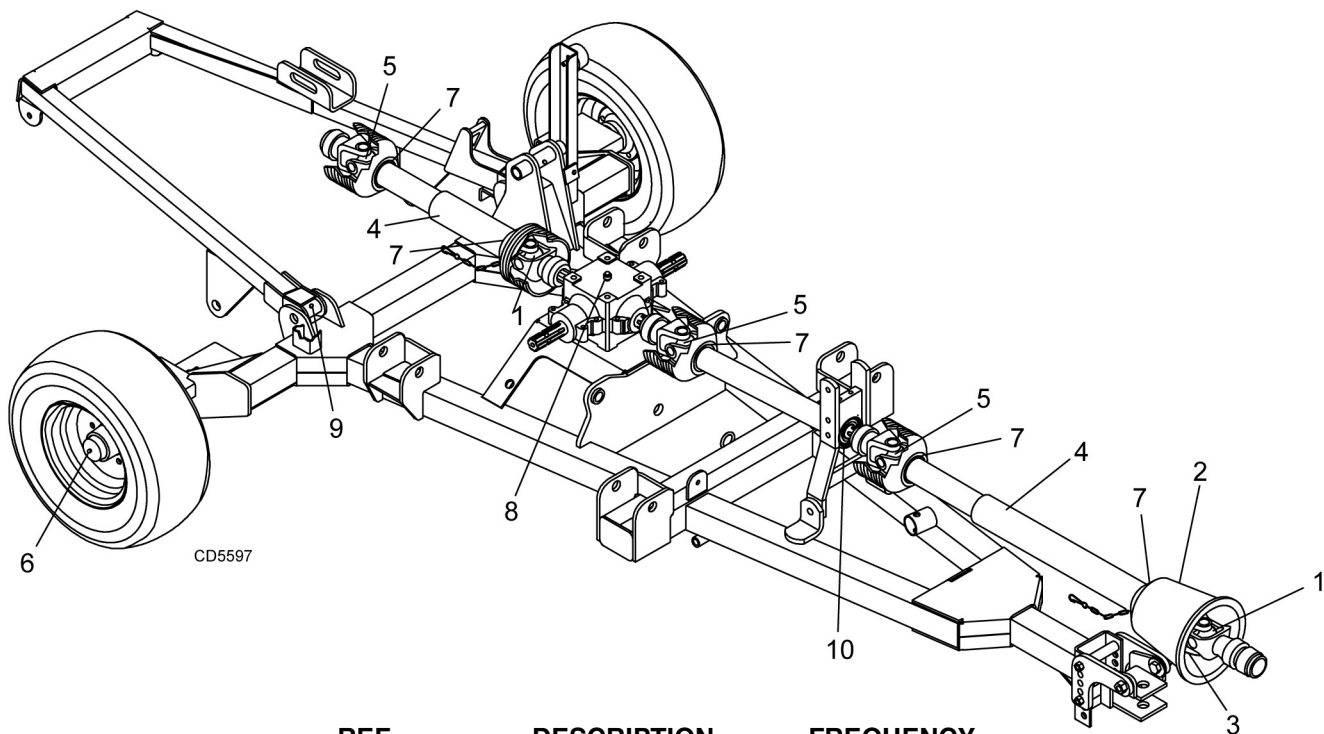
Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

Figure 7 and Figure 8 show lubrication points. The accompanying charts give the frequency of lubrication in operating hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Raise and lower mower after applying grease so that it spreads over the slip joint working area.

Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted. Be sure to clean fittings thoroughly before attaching grease gun. When applied according to the lubrication chart, one good pump of most guns is sufficient. Use SAE 80W or 90W gear lube in gear-boxes.

Daily lubrication of PTO slip joints is necessary. Failure to maintain proper lubrication can result in damage to U-joints, gearboxes and/or drive shafts. Raise or lower mower until grease fittings in PTO shields are exposed. Insert grease gun through slots and apply grease to all sides of shafts. Always stand clear of mower and wing arm mechanism to avoid being pinched or crushed should the mower or wing suddenly lower.

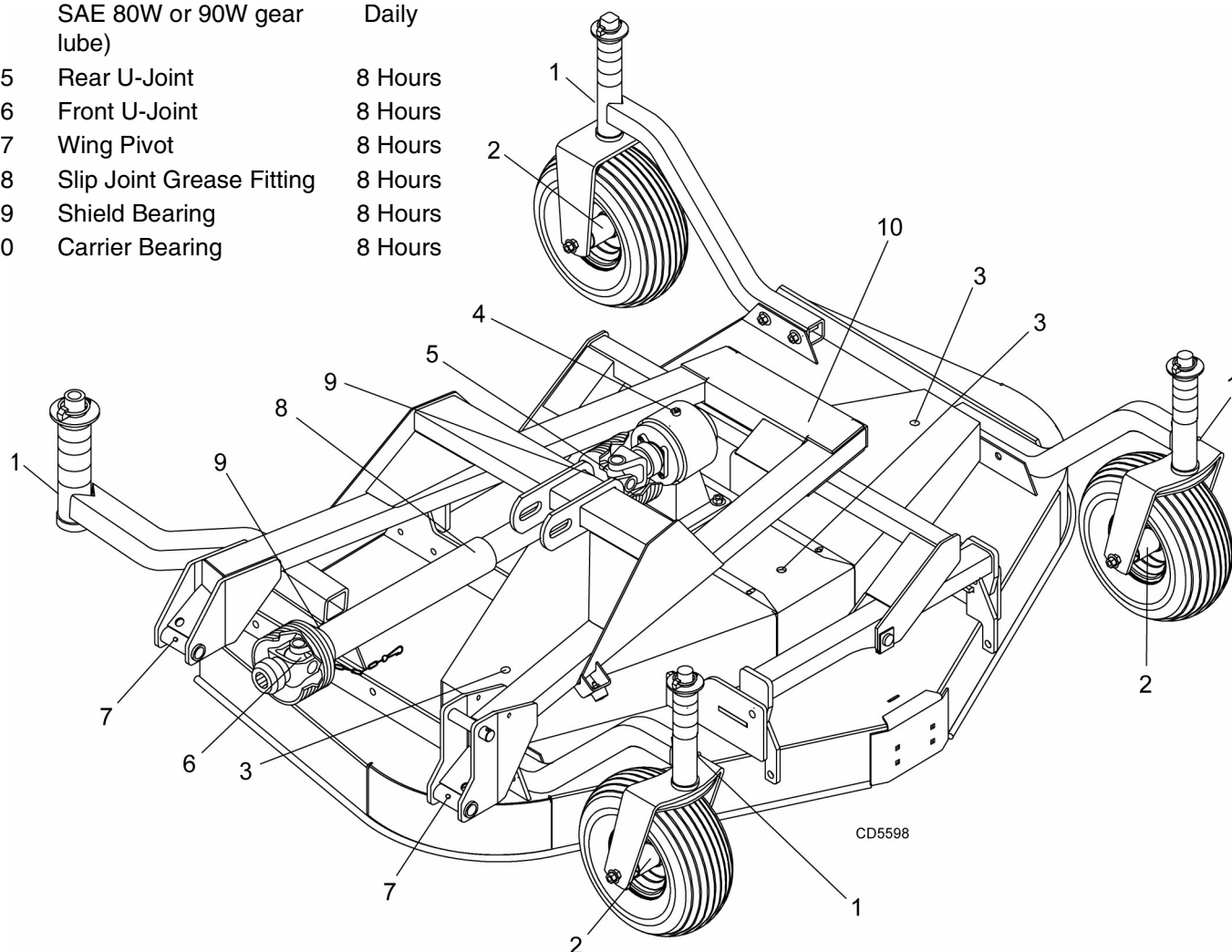


<u>REF</u>	<u>DESCRIPTION</u>	<u>FREQUENCY</u>
1	Front U-Joint	8 Hours
2	Center U-Joint	8 Hours
3	CV Body	8 Hours
4	Slip Joint Grease Fitting	8 Hours
5	Rear U-Joint	8 Hours
6	Transport Wheel Hub	8 Hours
7	Shield Bearing	8 Hours
8	Splitter Gearbox (Fill 1/2 full with SAE 80W or 90W gear lube)	Check Daily
9	Rear Deck Pivot Arm	8 Hours
10	Drive Carrier Bearing	8 Hours

**Figure 7.** Lubrication Points - Trailer



<u>REF</u>	<u>DESCRIPTION</u>	<u>FREQUENCY</u>
1	Caster Wheel Pivots	8 Hours
2	Caster Wheel Hubs	8 Hours
3	Blade Spindles	8 Hours
4	Gearbox (Fill 1/2 full with SAE 80W or 90W gear lube)	Check Daily
5	Rear U-Joint	8 Hours
6	Front U-Joint	8 Hours
7	Wing Pivot	8 Hours
8	Slip Joint Grease Fitting	8 Hours
9	Shield Bearing	8 Hours
10	Carrier Bearing	8 Hours



**Figure 8.** Lubrication Points - Deck

## **BELT**

### **Belt Replacement**

One of the major causes of belt failure is improper installation. Before installing a new belt, check the following:

1. Check pulley shafts and bearings for wear.
2. Check pulley grooves for cleanliness.
3. Make sure spindles turn freely and without wobble.

If grooves require cleaning, moisten a cloth with a non-flammable, non-toxic degreasing agent or commercial detergent and water.

Avoid excessive force during installation. Do not use tools to pry belt into pulley groove. Do not roll belt over pulleys to install. This can cause hidden damage and premature belt failure.

### **Belt Installation**

#### **WING DECK - FM1012**

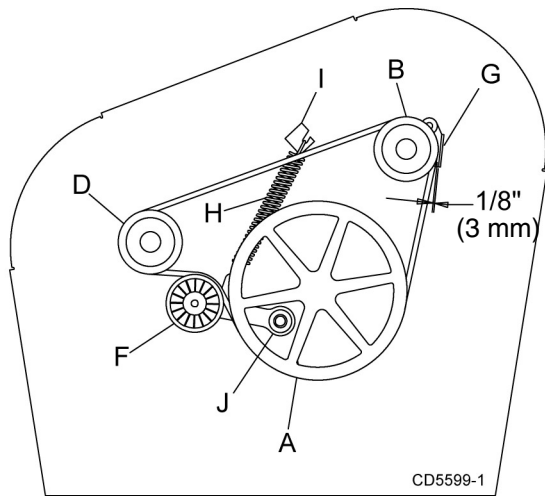


■ Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury.

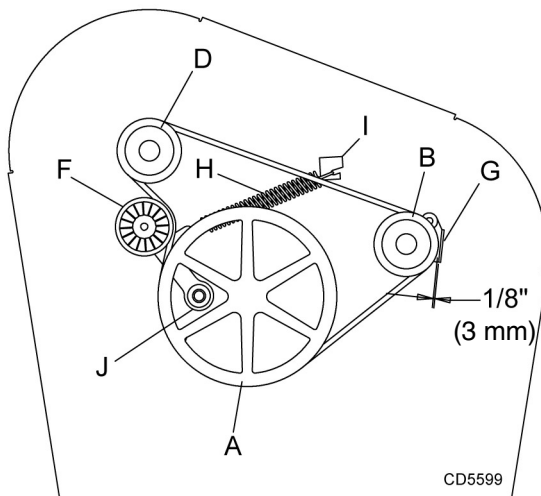
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**Figure 9. Belt Routing Right Wing**



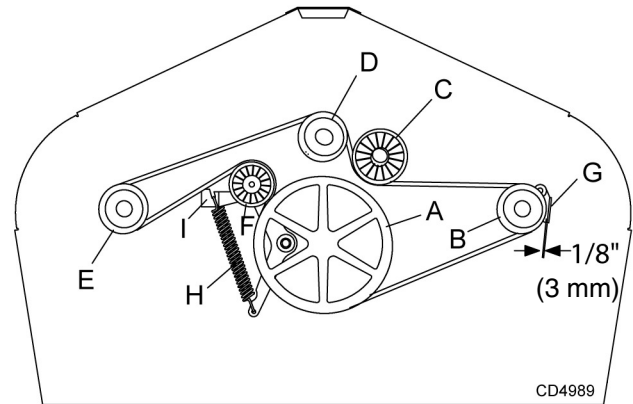
**Figure 10. Belt Routing Left Wing**

1. Slide Belt under drive pulley A and over idler arm. Position the belt around drive pulley A.
2. Loosen the bolt holding belt guide G and swing it away from pulley B. Route the belt around pulley D as shown.
3. Make sure the belt is on drive pulley A; route around idler F.
4. Grasp the belt between spindle pulley B and spindle pulley D. Drive pulley A. Pull spring loaded idler with belt to obtain enough belt length to route it over pulley B. Make sure spring loaded idler pivots freely with belt installed.
5. Adjust belt guide G to provide 1/16" to 1/8" (2 - 3 mm) clearance from belt. Tighten the bolt to 85 lbs/ft. (115 N-m).

**REAR DECK - FM1012**  
**ALL DECKS - FM1015 & FM1017**

## **CAUTION**

■ Use care when installing or removing belt from spring-loaded idler. Springs store energy when extended and, if released suddenly, can cause personal injury.



**Figure 11. Belt Routing**

1. Slide the belt under drive pulley A and over idler arm. Position the belt around drive pulley A.
2. Loosen the bolt holding belt guide G and swing it away from pulley B. Route the belt around pulley B, idler C, and pulley D as shown.
3. Make sure the belt is on drive pulley A; route around idler F.
4. Grasp the belt between spindle pulley E, spring loaded idler F, and spindle pulley D. Pull spring loaded idler with belt to obtain enough belt length to route it over pulley E. Make sure spring loaded idler pivots freely with belt installed.
5. Adjust belt guide G to provide 1/16" to 1/8" (2 - 3 mm) clearance from belt. Tighten bolt to 85 lbs/ft. (115 N-m).

## **BLADE**

### **Blade Servicing**

## **WARNING**

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

## ⚠ WARNING

■ **Make sure shields and guards are properly installed and in good condition. Replace if damaged.**

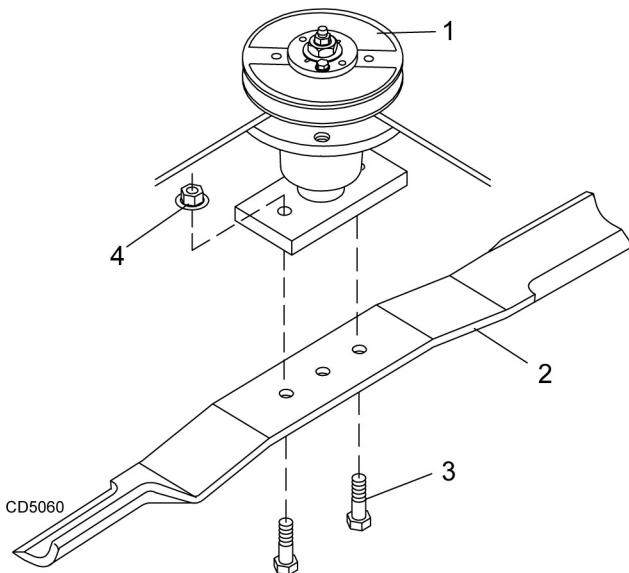
### Blade Installation

## ⚠ CAUTION

■ **Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.**

Inspect blades before each use to determine that they are mounted tightly and are in good condition. Replace any blade that is bent, excessively nicked, worn, or has any other damage. Small nicks can be ground out when sharpening.

1. Place cap screws (3) through outer holes in blade and spindle shaft.
2. Make sure blade cutting edge is positioned to lead in a clockwise rotation, as viewed from top of mower.
3. Place locknuts (4) on screws and torque to 84 lbs/ft. (114 N-m).



1. Spindle assembly
2. Blade
3. Screw, HHCS 1/2 NC x 1-1/2 GR5
4. Nut, flange lock 1/2 NC

**Figure 12. Blade Assembly**

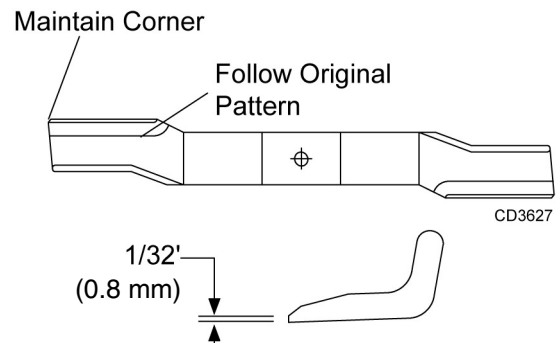
### Blade Sharpening

## NOTICE

■ **When sharpening blades, be sure to balance them. Unbalanced blades will cause excessive**

**vibration which can damage blade spindle bearings. Vibration may also cause structural cracks in mower components.**

1. Remove blades.
2. Always sharpen both ends at the same time to maintain balance.
3. Follow original sharpening pattern.
4. Do not sharpen blade to a razor edge. Leave from 1/32" to 1/16" (0.8 - 2 mm) blunt edge.
5. Do not sharpen back side.



**Figure 13. Blade Sharpening**

## CLEANING

### After Each Use

- Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Inspect machine and replace worn or damaged parts.
- Replace any safety decals that are missing or not readable.

### Periodically or Before Extended Storage

- Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove the remainder using a low-pressure water spray.
  1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
  2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
  3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.
- Inspect machine and replace worn or damaged parts.
- Sand down scratches and the edges of areas of missing paint and coat with spray paint of matching color (purchase from your dealer).
- Replace any safety decals that are missing or not readable (supplied free by your dealer). See Safety Decals section for location drawing.

# TROUBLESHOOTING

## MOWING CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Grass cut higher in center of swath than at edge	Height of mower higher at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch (13 mm) of same height. See instructions on page 14.
	Loose blade	Check blade hardware.
Grass cut lower in center of swath than at edge	Height of mower lower at front than at rear	Adjust mower height and attitude so that mower rear and front are within 1/2 inch (13 mm) of same height. See instructions on page 14.
	Loose blade	Check blade hardware.
Streaking conditions in swath	Conditions too wet for mowing	Allow grass to dry before mowing.
	Blades unable to cut that part of grass pressed down by path of tractor tires	Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help. Adjust tractor tire spacing if possible.
	Dull blades	Sharpen or replace blades.
	Loose blade	Check blade hardware.
Material discharges from mower unevenly; bunches of material along swath	Material too high and too much material	Reduce ground speed but maintain 540 rpm at tractor PTO, or make two passes over material. Raise mower for the first pass and lower for the second and cut 90 degrees to first pass. Raise rear of mower high enough to permit material discharge.
	Grass wet	Allow grass to dry before mowing. Slow ground speed of tractor but keep engine running at full PTO rpm.

# TROUBLESHOOTING

## BELT CONDITIONS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Belt slippage	Mower overloading; material too tall or heavy	Reduce tractor ground speed but maintain full PTO rpm.  Cut material twice, one high pass and then mow at desired height. Cut 90 degrees to first pass.
	Oil on belt from over lubrication	Be careful not to over lubricate.  Clean lubricant from belt and pulleys with clean rag. Replace oil-soaked belt.
	Belt hung up or rubbing	Check belt position in pulleys and idlers.  Check belt for free travel in pulleys.  Check under mower and around blade spindle shaft for wire, rags, or other foreign material.  Clean all material from under mower.
Frayed edges on belt cover	Belt misaligned	Re-align belt. Be sure belt does not rub any other part while running.
	Pulley misaligned	Inspect to ensure belt is running in center of backside idler. Shim idler as necessary to align.
Belt rollover	Pulley misaligned	Re-align.
	Damaged belt	Replace belt.*
	Foreign object in pulley groove	Inspect all pulley grooves for rust, paint, or weld spots and remove.
	Worn pulley groove	Replace pulley.
Damaged belt	Rollover, high shock loads or installation damaged	Replace belt.*
Belt breakage	High shock loads	Avoid abusive mowing.  Avoid hitting the ground or large obstructions.
	Belt came off drive	Check pulleys for foreign material in grooves.  Avoid hitting solid objects or ground.

\* Check belt for damage by laying it flat on the floor. A belt that does not lie flat (has humps or twists, indicating broken or stretched cords) must be replaced.

# DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

## WARNING

■ Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.

■ Keep all persons away from operator control area while performing adjustments, service, or maintenance.

## CAUTION

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

### BLOCKING METHOD

Do not work underneath mower unless it is properly attached to the tractor and blocked securely. When properly attached, the unit will be anchored to minimize front to rear movement.

The only approved blocking device for this mower is a jackstand with a load rating of 1000 pounds (454 kg) or more. One jackstand under each corner of each deck (12 total) must be installed before working underneath this unit.

Before blocking, be sure that the mower is securely attached to the tractor. Lower mower units to the ground. Raise the mower units as needed for working room and securely block them. Set tractor brakes, turn engine off and remove key, then disconnect mower driveline.

When blocking, you must consider the overall stability of the unit. Just placing jackstands under the unit will not ensure your safety. The working surface must be level and solid to support the loaded weight of the jackstands. Ensure that jackstands are stable at both top and bottom. Before working under any portion of the mower, test the stability of your blocking with the full weight of the mower units lowered onto the jackstands.

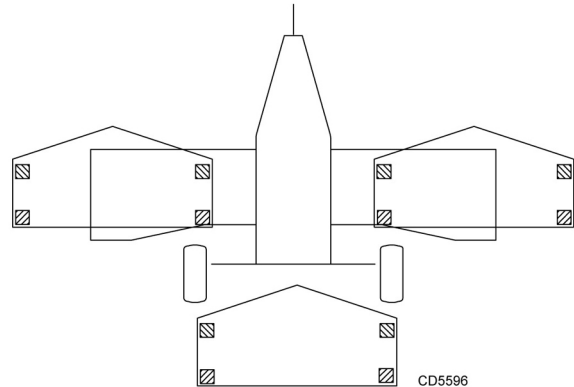


Figure 14. Jackstand Placement

## BLADE SPINDLE

### Servicing

Spindle repair requires special skills and tools. If your shop is not properly equipped or your mechanics are not trained in this type of repair, you may be time and money ahead to use a new spindle assembly.

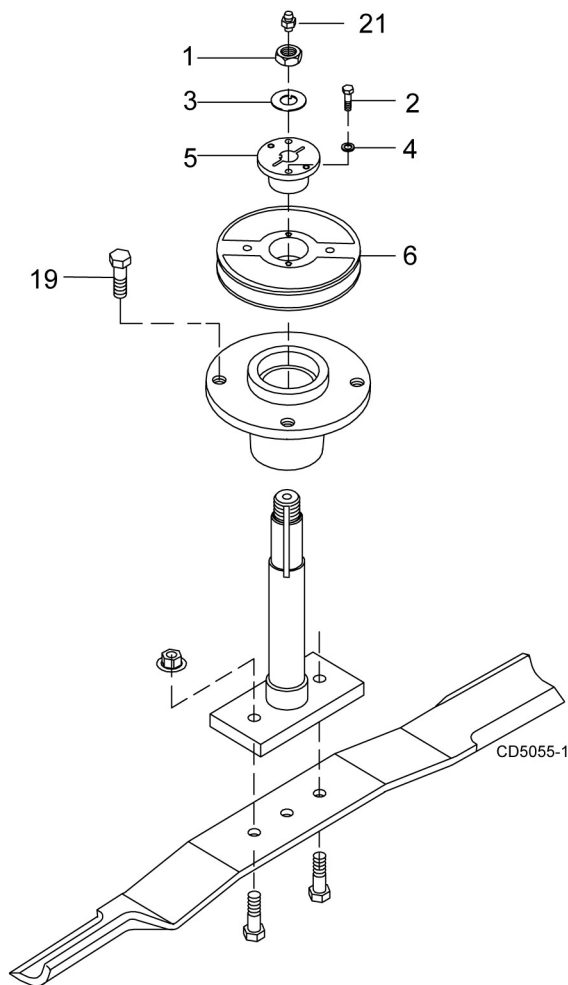
For reference, the grease fitting is in the top of the spindle shaft.

Permatex<sup>®</sup> 3D Aviation Form-A-Gasket or equivalent is recommended as a sealant.

### Spindle Removal

1. Remove blade from spindle.
2. Remove belt from pulleys.
3. Remove jam nut (1) and washer (3) from top of spindle shaft.
4. Disassemble split taper bushing (5) (located on top of pulley) by removing the two bolts (2) and washers (4).
5. Insert bolts (2) into the threaded holes of bushing flange.
6. Tighten bolts alternately to remove split taper bushing.
7. Remove pulley (6).
8. Remove bolts (19) that attach spindle to mower frame and remove spindle.
9. Remove grease fitting (21) from top of shaft.

1. Permatex is a registered trademark of the Permatex Corporation.

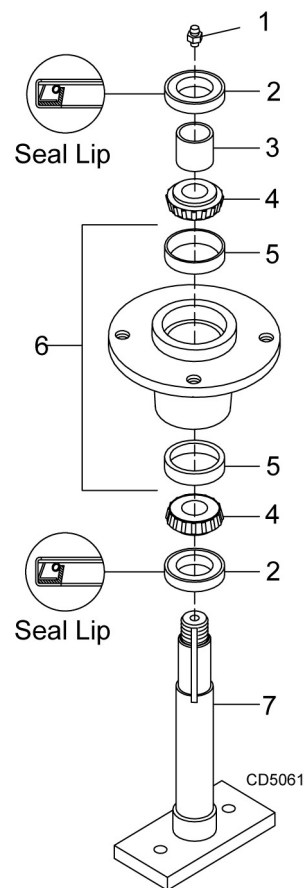


1. Nut, Jam 7/8 NF
2. Screw, HHCS 1/4 NC x 1 GR5
3. Washer, Lock .929 x 1.66
4. Washer, Lock 1/4
5. Bushing, H 1 Strt bore w/key
6. Sheave, H 1 BK
19. Screw, HHCS 1/2 NF x 1-1/4 GR5
21. Grease fitting

**Figure 15.** Sheave and Blade Assembly

## Spindle Disassembly

1. Place spindle assembly in press and press shaft down through housing.
2. Remove seals from housing.
3. Remove bearing cups from housing by placing a punch in the slots provided and driving them out. Alternate punch positions from side to side. Take care to prevent housing damage.



1. Grease fitting
2. Seal, 1.50 x 2.12 x .31
3. Sleeve, 1.14 x 1.50 x .55
4. Bearing cone
5. Bearing cup
6. Spindle, Housing
7. Shaft, Blade spindle

**Figure 16.** Spindle and Shaft Assembly

## Spindle Assembly

Refer to Figure 16 or Figure 17.

Bearing cones and cups are designed to work together. It is important to position them so bearing cone taper mates with cup taper.

1. Lubricate new cups with a light oil. Place them in spindle housing so they will mate with bearing cones. Cups and cones are a press fit to minimize wear.
2. Seat cups securely with a press or place a large drift in the flat lip and drive them into housing until cup seats against machined shoulder of housing.
3. Place bottom bearing cone into spindle with taper positioned to mate with cup.
4. Identify the open side of the seal containing the spring.

## NOTICE

■ **Improper positioning of seals can cause seal damage. An improperly installed seal will leak and could cause bearing failure.**

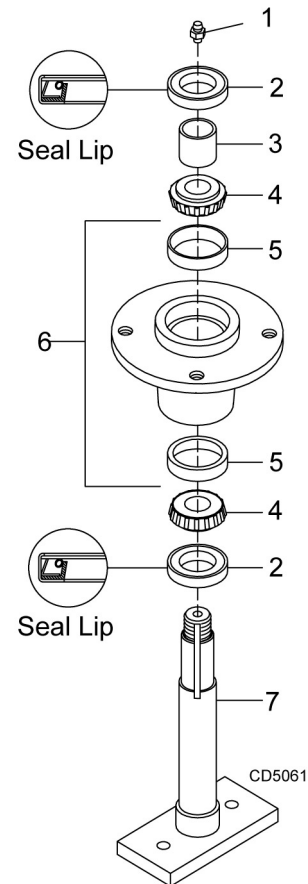
5. Apply a thin coat of Permatex to the area of housing where seals seat.
6. Install bottom seal with spring up toward center of housing.
7. Place seal squarely on housing and select a piece of pipe or tubing with an OD that will set on outside edge of seal. A tubing with an OD that is too small will bow seal cage.
8. Carefully press seal into housing to prevent distortion to metal seal cage. Bottom seal should seat firmly and squarely against machined shoulder in housing.
9. Make sure seal lip did not roll under. Distortion to seal cage or damage to seal lip will cause seal to leak. Damaged seals must be replaced.
10. Insert shaft and bearing through bottom of housing.
11. Fill housing cavity with a medium grade grease.
12. Install top bearing on shaft to mate with top cone.
13. Apply a thin coat of Permatex to shaft area where sleeve will seat.
14. Install sleeve on shaft and press sleeve and bearing into housing until all free play is removed and there is a very light drag on bearings (similar to adjusting front wheel bearings on an automobile). Check by spinning spindle. It should turn freely.
15. Be careful not to overtighten bearings. Proper bearing adjustment is essential to good bearing life.
16. If you overtighten bearings, hold spindle housing and rap spindle shaft with a lead hammer.
17. Carefully press top seal in with spring up. Top seal should be flush with or to within 1/16" (2 mm) above the housing.
18. Rotate housing on spindle shaft, checking for free movement.
19. Install grease fitting in spindle shaft.

## Spindle Installation

## NOTICE

■ **Pulley installation sequence is very important for bearing life. Follow the sequence exactly.**

1. Install spindle through bottom of mower and secure with four mounting bolts.
2. Install pulley and split taper bushing with integral key on spindle shaft. Make sure bushing is in contact with sleeve on spindle shaft.
3. Alternately tighten split taper bushing cap screws to 12 lbs/ft. (16 N-m).
4. Install toothed lock washer and nut on spindle shaft. Tighten nut until snug. Bend up edge of lock washer against a flat side on nut.



1. Grease fitting
2. Seal, 1.50 x 2.12 x .31
3. Sleeve, 1.14 x 1.50 x .55
4. Bearing cone
5. Bearing cup
6. Spindle, Housing
7. Shaft, Blade spindle

**Figure 17.** Spindle and Shaft Assembly



## GEARBOX REPAIR

Read this entire section before starting any repair. Many steps are dependent on each other.

Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. It is more economical to purchase a complete gearbox if repair to anything other than replacement of bearings, seals or gaskets is required.

Inspect gearbox for leakage and bad bearings.

Leakage is a very serious problem and must be corrected immediately.

Bearing failure is indicated by excessive noise and side-to-side or end play in gear shafts.

### Seal Replacement

Recommended sealant for gearbox repair is Permatex Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the cutter.

### Seal Installation

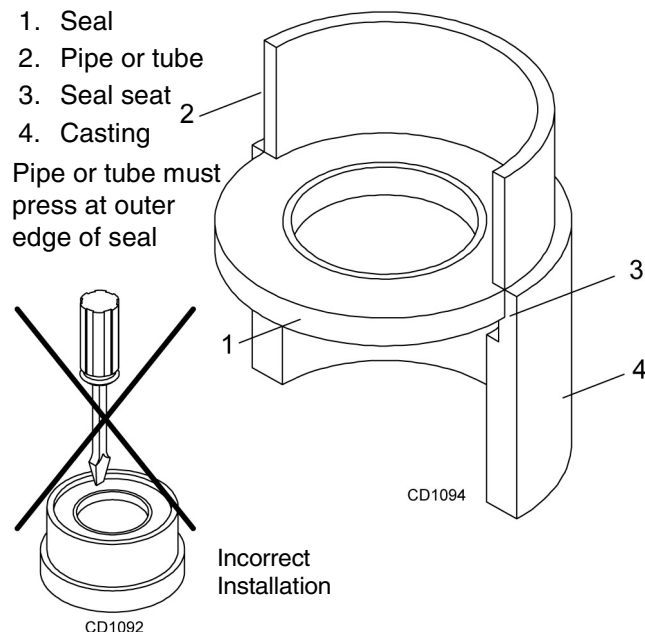


Figure 18. Seal Installation

**NOTE:** Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.
5. Carefully press seal into housing, avoiding distortion to the metal seal cage.

### Vertical Shaft Repair (Figure 20)

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. Remove gearbox stand from mower deck.
4. Remove gearbox and pulley from gearbox stand.
5. Remove vertical shaft seal (18). Replace with new seal (see Seal Replacement, page 29).

Vertical seal should be recessed in housing. Horizontal seal should be pressed flush with outside of housing.

**NOTE:** Distortion to seal cage or damage to seal lip will cause seal to leak.

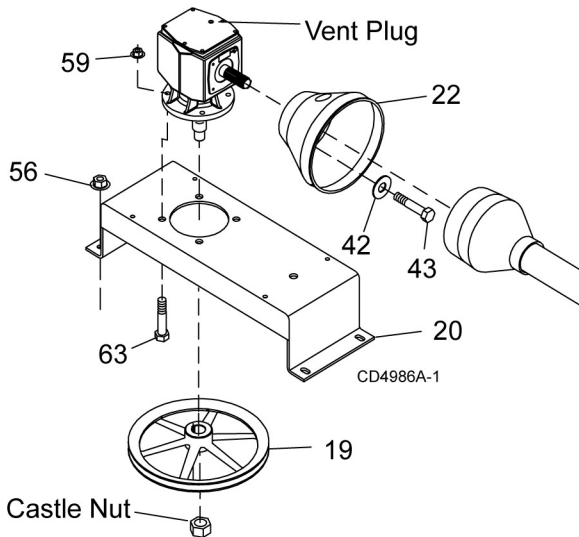
6. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
7. Assemble gearbox and pulley to gearbox stand. Attach gearbox stand to mower deck.

### Horizontal Leak Repair (Figure 20)

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (24) and siphon gear lube from housing through this opening.
3. If the leak occurred at either end of horizontal shaft, remove oil cap (20) and/or oil seal (19). Replace with new one (refer to Seal Replacement, page 29).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

## Gearbox Removal from Mower (Figure 19)

1. Disconnect and remove the rear driveline from the gearbox.
2. Remove vent plug and siphon gear lube from housing through this opening.
3. Remove gearbox stand (20) from mower deck by removing four flanged lock nuts (56).
4. Remove four cap screws (43) and washers (42) and remove shield (22) from gearbox.
5. Remove castle nut and hardware from output shaft of gearbox.
6. Remove sheave (19) from gearbox.



19. Sheave, Offset 12.4 PD  
20. Gearbox Stand  
22. Shield, Counter Cone  
42. Washer, Flat Standard 5/16  
43. Screw, HHCS 8mm x 1.25P x 16mm  
56. Nut, Flanged Lock 1/2 NC  
59. Nut, Flanged Lock 5/8 NC  
63. Screw, Flanged Hex Head 5/8 NC x 1-3/4

**Figure 19.** Gearbox Stand Assembly

## Gearbox Disassembly

1. Remove top cover (22) from housing. Turn gearbox upside down and pour out remaining gear oil from gearbox.
2. Remove oil cap (20) (to be replaced).
3. Remove snap ring (10) and shim (13) from input shaft (3).
4. Support gearbox in hand press and push on input shaft (3) to remove bearing (7) and spacer (11).
5. Remove gear (1) from inside housing.
6. Remove oil seal (19) from front of housing (to be replaced).

7. Remove snap ring (10) and shim (13) from front of housing (2).
8. Remove input bearing (7) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (15) and cotter pin (25) are already removed with the drive sheave. Remove snap ring (21), washer (8), and seal (18).
11. Remove cotter pin (9), castle nut (14), and washer (17) from output shaft (4).
12. Remove output shaft (4) by using a punch and hammer and tap on top to drive down.
13. Remove gear (5) and shim (16) from inside housing.
14. Remove bearing (26) by using a punch and hammer from the top, outside the housing.
15. Support housing upside down (top cover surface) and remove bearing (6) by using a punch and hammer from the bottom side of the housing.
16. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
17. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
18. Inspect housing and caps for cracks or other damage.

## Gearbox Reassembly (Figure 20)

**NOTE:** Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert output bearings (6 & 26) in the housing, using a round tube of the correct diameter and a hand press.
4. Slide output shaft (4) through both bearings (6 & 26) until it rests against bearing (6).
5. Slide shim (16) over output shaft (4).
6. Press gear (5) onto output shaft (4) and secure with washer (17), castle nut (14), and cotter pin (9).
7. Apply grease to lower seal lips (18) and press seal over output shaft (4), using a tube of the correct

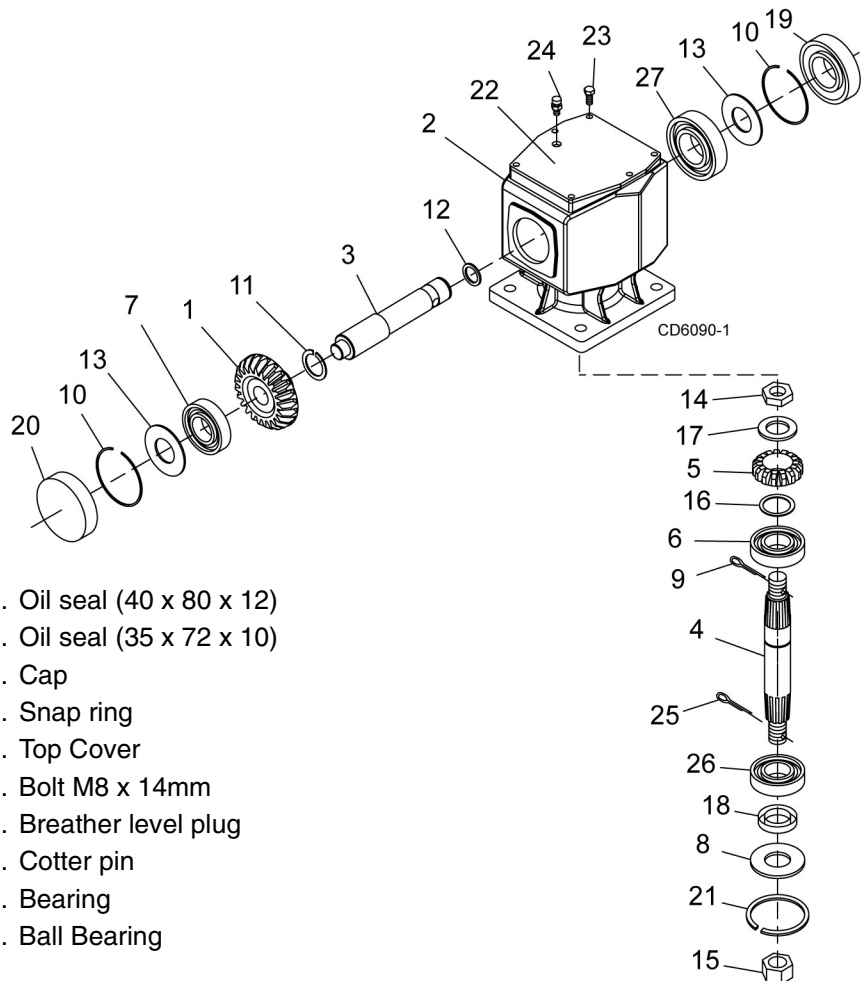
diameter. Be sure not to damage the seal lip. Press in housing so that seal is recessed.

8. Insert protective washer (8) by hand. Install snap ring (21) and position it together with dual lip seal (18) by pressing it into position. Verify that snap ring is seated correctly.
9. Press bearing (7) into the housing, using a round tube of the correct diameter and a hand press. Secure with shim (13) and snap ring (10).
10. Secure snap ring (11) on input shaft (3) if not already secure.
11. Place gear (1) through top of housing and align gear (1) and gear (5) so that gear teeth are a match.
12. While holding gear (1) in place, slide input shaft (3) through gear (1) and bearing (7). Align splines on shaft (3) and gear (1).
13. Slide spacer (12) over input shaft (3) and press bearing onto input shaft (3), using a round tube of the correct diameter and a hand press.
14. Slide shim (13) over input shaft (3) and secure with snap ring (10).

15. Check input shaft end float by moving the input shaft (3) by hand. If end float is higher than 0.012" (0.305 mm), insert shim between input shaft (3) and rear bearing (7). Repeat until end float is less than 0.012" (0.305 mm). Check rotational torque by hand. The torque should be less than 2.2 lbs.-inch (0.25 N-m).
16. Check that the gear backlash is between 0.006" and 0.016" (0.152 mm - 0.406 mm). You should not have to adjust the backlash.
17. Press in input oil seal (19), using tube of correct diameter. Be careful not to damage seal lip.
18. Press oil cap (20) on to cover the rear of housing, using a tube of the correct diameter.
19. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi (28 kPa) compressed air and immerse the gearbox in water to verify that there are no leaks.
20. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

1. Crown gear
2. Gearbox housing
3. Input shaft
4. Output shaft
5. Gear pinion
6. Bearing
7. Bearing
8. Protective flat washer
9. Cotter pin
10. Snap ring
11. Snap ring
12. Spacer
13. Shim kit
14. Castle nut
15. Castle nut M24 x 2
16. Shim Kit
17. Flat washer

18. Oil seal (40 x 80 x 12)
19. Oil seal (35 x 72 x 10)
20. Cap
21. Snap ring
22. Top Cover
23. Bolt M8 x 14mm
24. Breather level plug
25. Cotter pin
26. Bearing
27. Ball Bearing



**Figure 20.** Gearbox Assembly

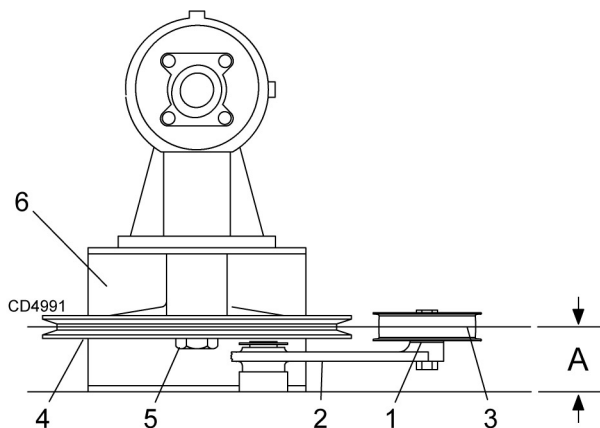
## Gearbox Installation

**NOTE:** Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on gearbox stand and fasten with bolts and nuts. Torque bolts to 175 lbs.-ft. (237 N-m).
2. Attach drive sheave to output shaft. Secure using castle nut and hardware previously removed.
3. Attach Gearbox stand to mower using four flanged lock nuts.

## DRIVE SHEAVE INSTALLATION

1. When gear stand is installed on mower, dimension A (from the top of the mower deck to the center line of the drive pulley) must be 2-7/16" (61.913 mm) [ $\pm 1/32$ " ( $\pm 0.794$  mm)]. This is a critical dimension and must be carefully adjusted for proper belt life. Add or subtract shim washers under idler pulley to align with drive pulley.
2. Tighten gear stand hardware.
3. Fill gearbox half full with SAE 80W or 90W gear lube.
4. Check level after waiting five minutes to permit lube to work through bearings. Add lube, if necessary, until gearbox is half full.
5. Replace driveline shield. Attach driveline to gearbox.



1. Shim
2. Idler Arm
3. Idler Pulley
4. Drive Sheave
5. Castle nut & Cotter pin
6. Gearbox Stand

Figure 21. Drive Sheave Installation

## UNIVERSAL JOINT REPAIR

1. Yoke
2. Cup and bearings
3. Snap ring
4. Journal cross

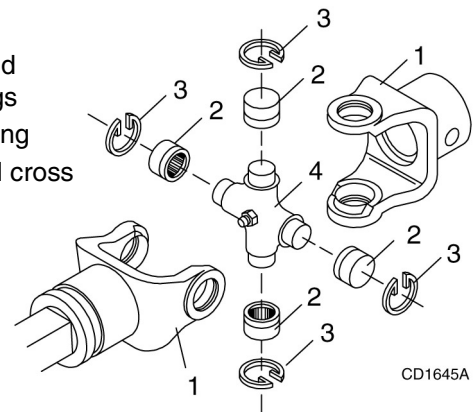


Figure 22. U-Joint Exploded View

## U-Joint Disassembly

1. Remove external snap rings from yokes in four locations as shown in Figure 23.

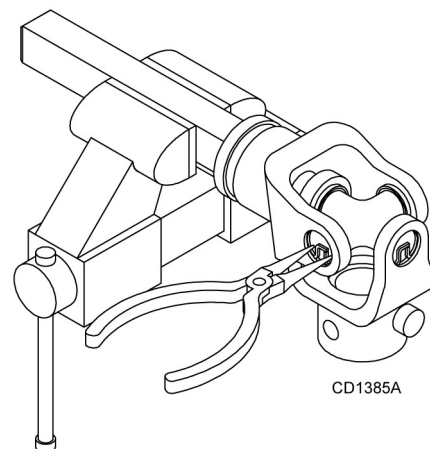


Figure 23

2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 24.

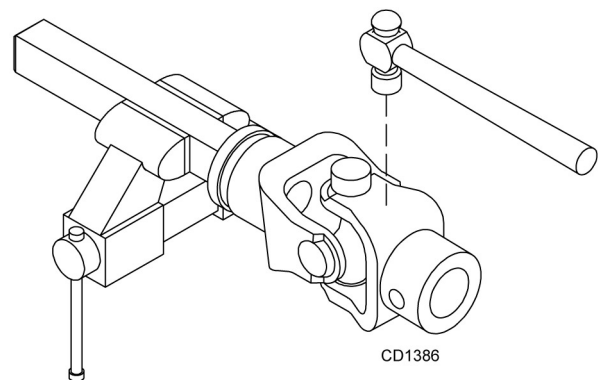
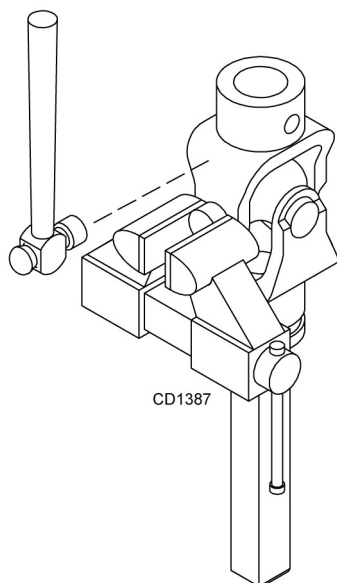


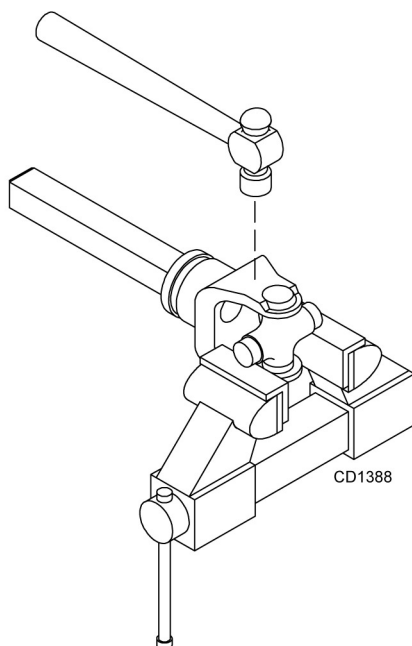
Figure 24

3. Clamp cup in vise as shown in Figure 25 and tap on yoke to completely remove cup from yoke. Repeat Step 2 and Step 3 for opposite cup.



**Figure 25**

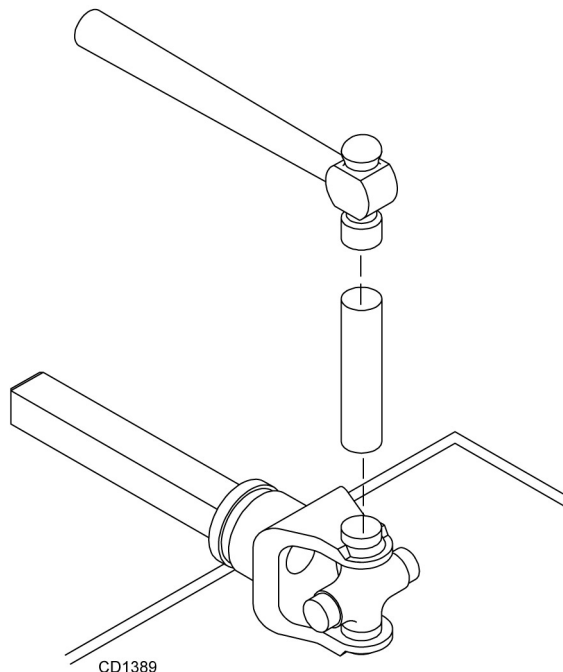
4. Place universal cross in vise as shown in Figure 26 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.



**Figure 26**

## U-Joint Assembly

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.
2. Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.
3. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 27. Install snap ring and repeat on opposite cup
4. Repeat Step 1 and Step 2 to install remaining cups in remaining yoke.
5. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.



**Figure 27**

# ASSEMBLY INSTRUCTIONS

## DEALER SET-UP INSTRUCTIONS

The mower is shipped mostly assembled but requires dealer set-up. The Frontier dealer should deliver the mower to the owner completely assembled, lubricated, and adjusted for normal conditions.

Recommended torque values for hardware are located on page 57.

Complete the Dealer Check Lists on page 36 when assembly is complete.

### **WARNING**

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

■ Before working underneath, carefully read Operator's Manual instructions, disconnect driveline, raise mower, securely block up all corners with jackstands, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failures, or mechanical component failures.

### **CAUTION**

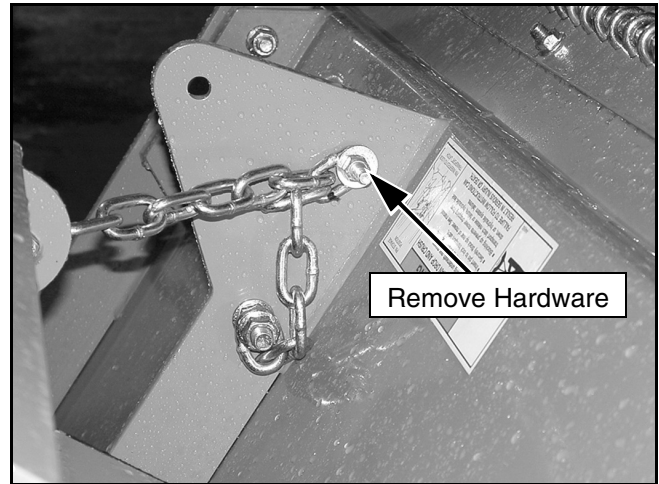
■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

### **WARNING**

■ Make sure spring-activated locking pin or collar

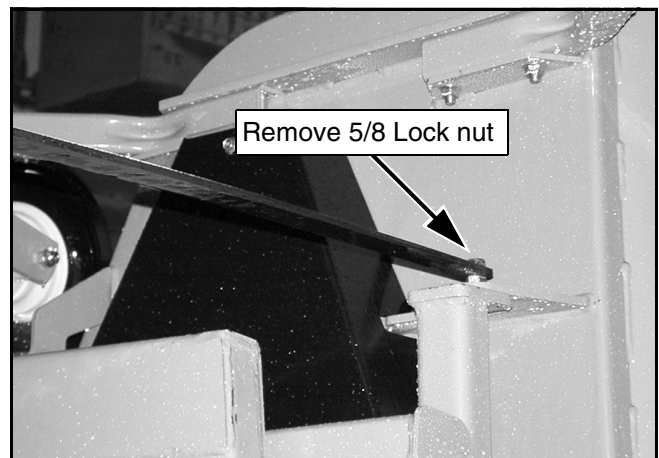
slides freely and is seated firmly in tractor PTO spline groove.

1. Remove front drive from between wing frames.
2. Attach to splitter gearbox.
3. Lift rear deck to take tension off rear lift chains.
4. Remove 3/8 bolts, washers, and nuts from both rear lift chains. See Figure 28. This hardware is for factory shipping purposes only and can be discarded.
5. Gently lower deck until the deck is supported by the lift chains.



**Figure 28.** Remove Shipping Hardware

6. Remove 5/8 lock nuts and remove shipping strap from between right and left decks.



**Figure 29.** Remove Shipping Strap (Right Wing)

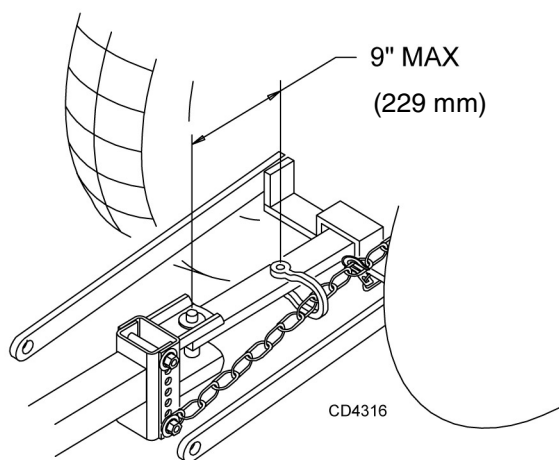
## Attach Mower to Tractor

1. Park the mower on a hard level surfaced with parking jack securely fastened to trailer.
2. Align tractor with hitch bracket on trailer frame.
3. Set tractor parking brake and block mower transport wheels.

4. Adjust tractor hitch bracket on trailer frame so the trailer is level when attached to the tractor.
5. Pin the mower to the tractor with a locking type hitch pin.
6. Attach drive shaft to tractor PTO. Make sure lock collar engages securely.
7. Attach end of transport lock release rope to a location on the tractor within easy reach of the operator and away from driveline.

**NOTE:** When routing the rope, do not route through the hydraulic hose guide and do not allow rope slack to drop between the driveline shields and the gearbox rotating shafts.

8. Attach towing safety chain to tractor drawbar as shown in Figure 30.



**Figure 30.** Tow Chain Installation

## Attach Hydraulic Hoses

### **WARNING**

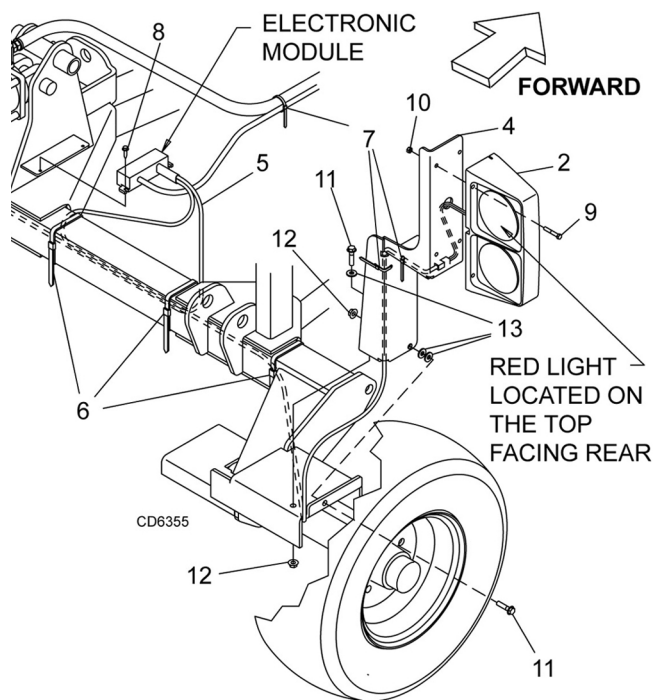
■ Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

Attach the mower hydraulic hose to the tractor port. Hydraulic quick coupler is not supplied.

**NOTE:** The mower hydraulic system should have been filled at the factory. Always assume it is empty. Fully purge air and fill the hydraulic system by raising and lowering wings several times while hooked to a tractor hydraulic supply. Keep all personnel away while raising and lowering.

## Lighting Kit Installation

1. Install electronic module to rear cylinder mount using #10 screws (8).
2. Route wires as shown. Do not install wire ties at this time. Be sure wire labeled "Left" is routed to left light. Pass wires over axles, under deck support platform, and up the outside rear corner.
3. Install left and right light brackets as shown using 3/8" bolts (11), washers (13), and nuts (12). If more clearance is desired between light brackets and tires, add more 3/8" flat washers. Be sure wires pass through the corners before tightening light brackets.
4. Connect lights to wiring harness.
5. Starting at each light, pull the wire tight and install wire ties as shown. Any extra slack in the wiring harness should be located at the center of machine near the electronic module. Route main wire along hydraulic hose and secure to hose using wire ties.



1. Left hand light (not shown)
2. Right hand light
3. Left light bracket (not shown)
4. Right light bracket
5. Wire harness
6. 14" Tie strap
7. 7" Tie strap
8. #10 x 1/2" Tapping screw
9. 1/4 NC x 1" Hex head cap screw GR5
10. 1/4 NC Lock nut
11. 3/8 NC x 1" Hex head cap screw flanged GR5
12. 3/8 NC Flange lock nut
13. 3/8" Standard flat washer

**Figure 31.** Lighting Kit Installation



# DEALER CHECK LISTS

## PRE-DELIVERY CHECK LIST

(DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to ensure it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that shields and guards are properly installed and in good condition. Replace if damaged.

- \_\_\_ Check all bolts to be sure they are properly torqued.
- \_\_\_ Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- \_\_\_ Check that blades have been properly installed.
- \_\_\_ Check mower attitude and belt alignment
- \_\_\_ Check and grease all lubrication points as identified in lubrication information on page 20.
- \_\_\_ Check the level of gearbox fluids before delivery. Service, if required, as specified in the lubrication information on page 20.

## DELIVERY CHECK LIST

(DEALER'S RESPONSIBILITY)

- \_\_\_ Show customer how to make adjustments and select proper PTO speed.
- \_\_\_ Show customer how to make sure driveline is properly installed and that spring-activated locking pin or collar slides freely and is seated in groove on tractor PTO shaft.
- \_\_\_ Show customer how to determine the turning limits of the CV PTO driveline.
- \_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- \_\_\_ Make customer aware of optional equipment available so that customer can make proper choices as required.
- \_\_\_ Instruct customer how to lubricate and explain importance of lubrication.
- \_\_\_ Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.

- \_\_\_ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- \_\_\_ Explain to customer the potential crushing hazards of going underneath raised equipment. Instruct that before going underneath to disconnect the driveline, securely block up all corners with jackstands and to follow all instructions in the "Blocking Method" on page 19 of the operators manual. Explain that blocking up prevents equipment dropping from hydraulic leak down, hydraulic system failures or mechanical component failures.
- \_\_\_ Point out all guards and shields. Explain their importance and the safety hazards that exist when not kept in place and in good condition.



## **Rear Discharge Grooming Mowers: FM1012, FM1015, FM1017**

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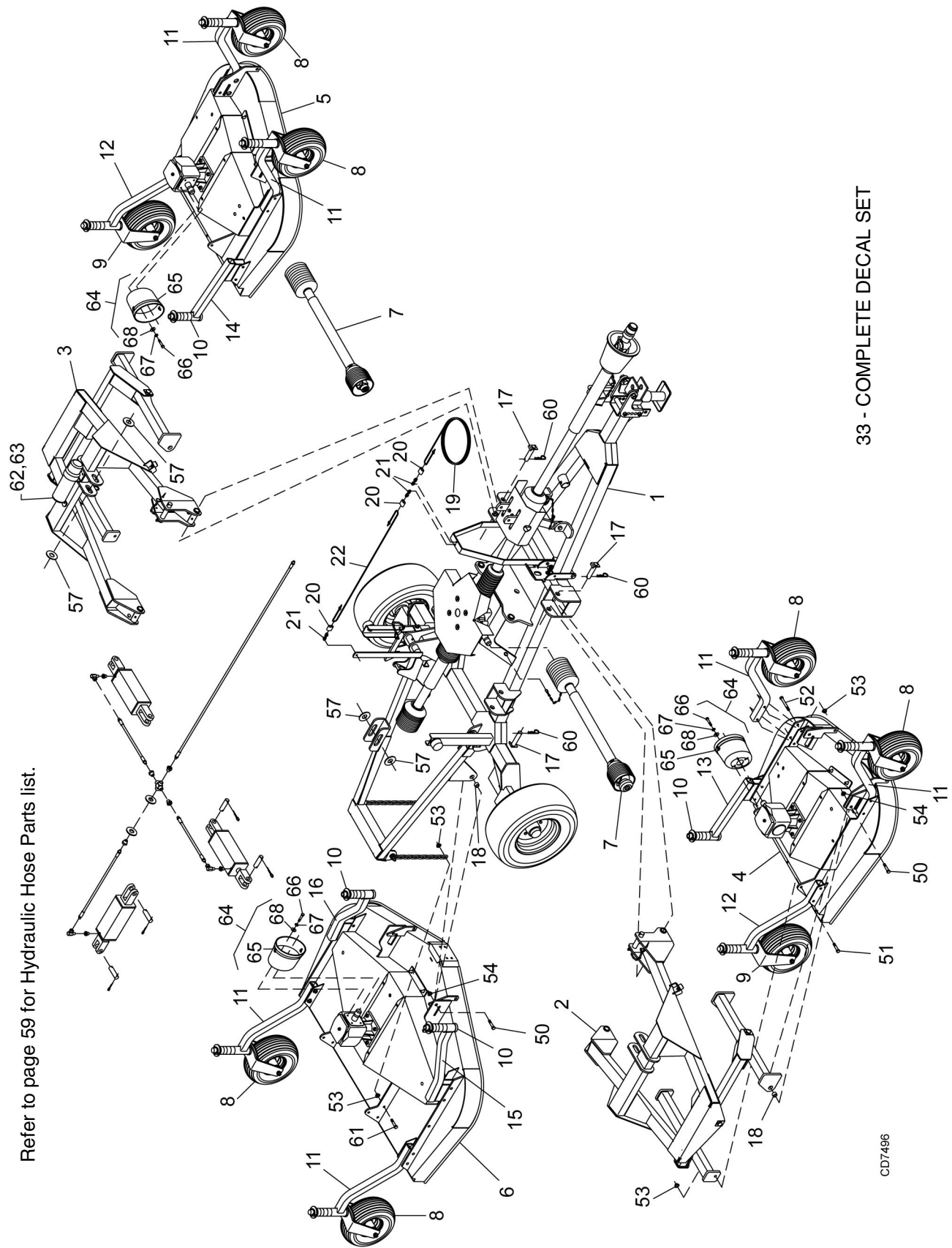
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CENTER & WING DECK ASSEMBLY .....	43
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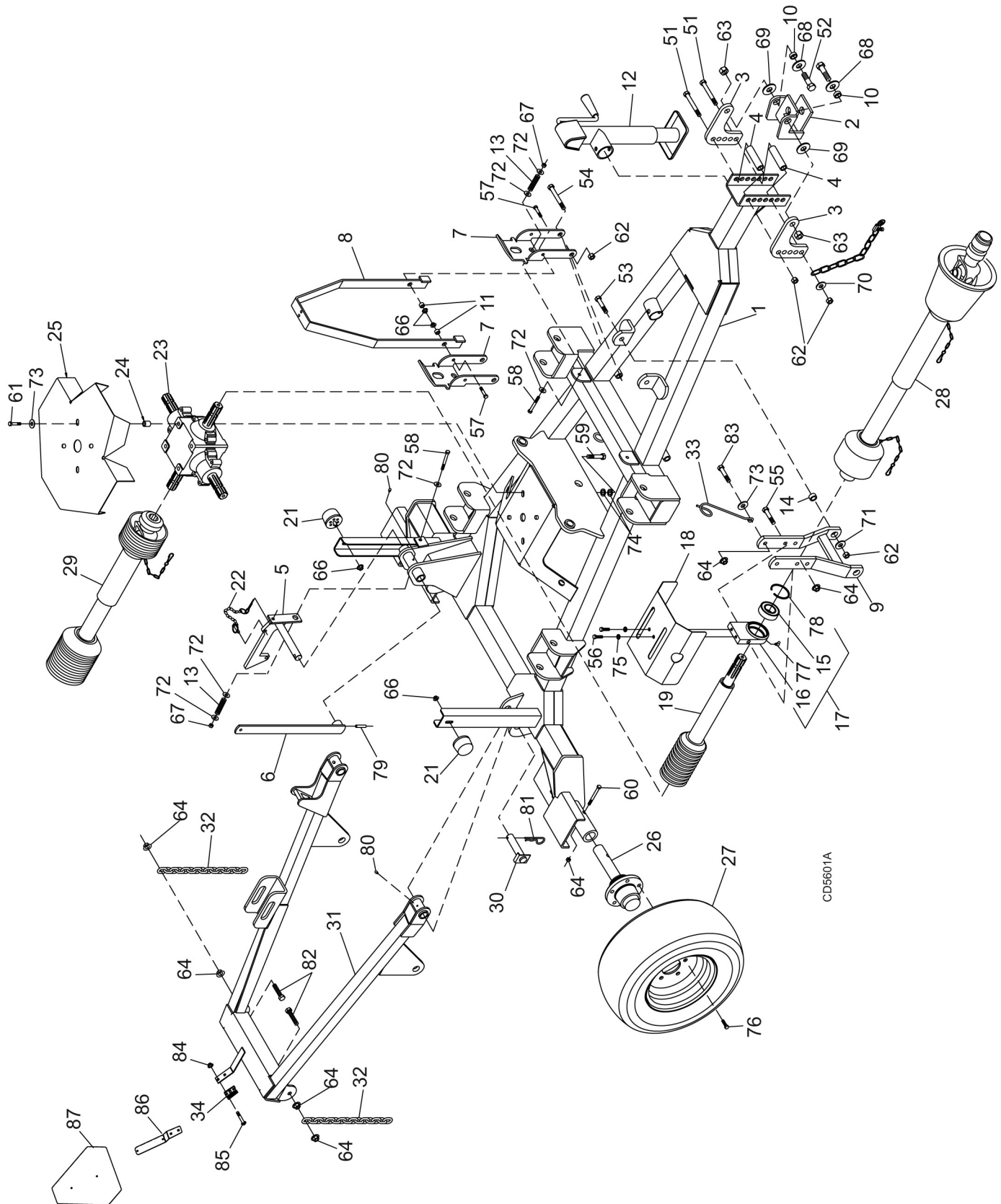
# FM1012, FM1015 & FM1017 MAIN FRAME ASSEMBLY



## FM1012, FM1015 & FM1017 MAIN FRAME ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	Trailer assembly (See page 40)	15	5WP58993	1	Caster arm asy, Right, FM1012 <b>-or-</b>
2	-----	1	Right wing assembly (See page 42)	15	5WP58974	1	Caster arm asy, Right, FM1015, FM1017
3	-----	1	Left wing assembly (See page 42)	16	5WP58994	1	Caster arm asy, Left, FM1012 <b>-or-</b>
4	-----	1	Right deck assembly FM1012 (See page 44) <b>-or-</b>	16	5WP58978	1	Caster arm asy, Left, FM1015, FM1017
4	-----	1	Right deck assembly FM1015, FM1017 (See page 43)	17	5WP38001	4	Pin, Wing hinge
5	-----	1	Left deck assembly FM1012 (See page 44) <b>-or-</b>	18	5WP1791	6	Sleeve, HT .63 x 1.00 x .56
5	-----	1	Left deck assembly FM1015, FM1017 (See page 43)	19	5WP38296	1	Rope, .25 x 95.0
6	-----	1	Center deck assembly FM1012 (See page 43) <b>-or-</b>	20	5WP38295	3	Rope clamp
6	-----	1	Center deck assembly FM1015, FM1017 (See page 43)	21	5WP38257	3	S-Hook, .25 x 2.25
7	5WP1023226	2	Drive, Cmpl 40, 21.3 x 32.3 FM1012 (See page 50) <b>-or-</b>	22	5WP38294	1	Rope, .25 x 46.0
7	5WP1023227	2	Drive, Cmpl 40, 25.6 x 40.9 FM1015 (See page 50) <b>-or-</b>	32	5WP1631	2	Pin, Headless 1.00 x 3.63
7	5WP1023228	2	Drive, Cmpl 40, 28.3 x 46.4 FM1017 (See page 50)	33	5WP40908	1	Complete decal set
8	-----	6	Rotating caster (See page 45)	50	*		Screw, HHCS 5/8 NC x 2-1/2 GR5
9	-----	2	Non-rotating caster (See page 45)	51	*		Screw, HHCS 1/2 NC x 1-3/4 GR5
10	-----	4	Height adjustment post (See page 46)	52	*		Screw, HHCS 1/2 NC x 3-1/4 GR5
11	5WP58956	6	Caster arm asy w/bearing	53	5WP11900		Nut, Flanged lock 1/2 NC
	5WP31780	12	Bushing, Oilite 1.25 x 1.50 x 1.50	54	5WP19025		Nut, Flanged lock 5/8 NC
	*	6	Grease fitting, 1/4 - 28 Tapered thread	57	*		Washer, Flat 1" standard
12	5WP58968	2	Caster arm asy, Non-rotating	60	*		Pin, Safety 3/16
13	5WP40947	1	Caster arm asy, FM1012 <b>-or-</b>	61	5WP62789		Screw, HHCS 1/2 NC x 2 FT GR5
13	5WP40944	1	Caster arm asy, Right, FM1015 <b>-or-</b>	62	5WP1003828	1	Manual tube assembly
13	5WP40942	1	Caster arm asy, Right, FM1017	63	5WP37420	2	Clamp, Hose 3.06 - 4.00
14	5WP40947	1	Caster arm asy, FM1012	64	5WP1024650	1	Clutch shield kit (includes items 65 through 68)
14	5WP40945	1	Caster arm asy, Left, FM1015 <b>-or-</b>	65	5WP1002048	3	Clutch shield
14	5WP40943	1	Caster arm asy, Left, FM1017	66	*		Screw, HHCS M8 x 1.25P x 20 mm
				67	*		Washer, 5/16 lock
				68	*		Washer, 5/16 flat
					*		Standard Hardware, Obtain Locally

# FM1012, FM1015 & FM1017 TRAILER ASSEMBLY



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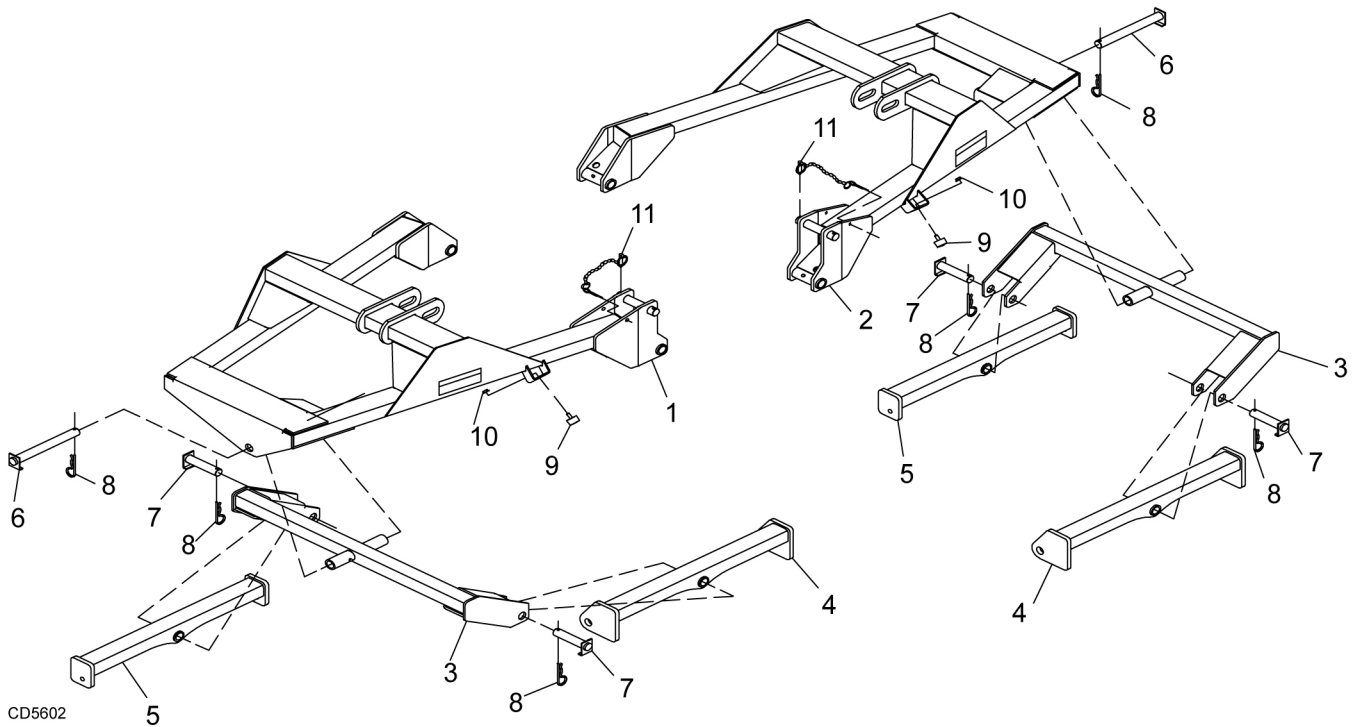
**40 Parts**

5WPMAN0183 (Rev. 7/9/2008)

## FM1012, FM1015 & FM1017 TRAILER ASSEMBLY

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	-----	1	Trailer frame	33	5WP3443	1	Hydraulic Hose holder
2	5WP1009501	1	Hitch, Category 1 (FM1012) -or-	34	5WP62484	1	Socket, SMV emblem
2	5WP1009502	1	Hitch, Category 2 (FM1015 & FM1017)	50		*	Screw, HHCS 5/8 NC x 7-1/2 GR5
3	5WP1006689	2	Link, Hitch adjustment	51		*	Screw, HHCS 5/8 NC x 7 GR5
4	5WP44639	2	Sleeve, .76 x 1.00 x 4.12	52		*	Screw, HHCS 3/4 NC x 2-1/4 GR5
5	5WP40804	1	Lock, Rear deck	53		*	Screw, HHCS 5/8 NC x 2 GR5
6	5WP40880	1	Lever, Rear deck lock release	54		*	Screw, HHCS 5/8 NC x 5 GR5
7	5WP40879	2	Lock, Wing deck	55		*	Screw, HHCS 1/2 NC x 5-1/4 GR5
8	5WP40938	1	Lever, Wing deck lock release	56		*	Screw, HHCS 3/8 NC x 1 GR5
9	5WP19201	1	H-Frame, CV drive	57		*	Screw, HHCS 3/8 NC x 1-1/4 GR5
10	5WP44641	2	Sleeve, HT .78 x 1.00 x .69	58		*	Screw, HHCS 3/8 NC x 3-1/2 GR5
11	5WP31464	2	Sleeve, .38 x .63 x .34	59		*	Screw, HHCS 1/2 NC x 1-1/4 GR5
12	5WP23790	1	Jack, Parking	60		*	Screw, HHCS 1/2 NC x 3 GR5
13	5WP21957	3	Spring, Comp .58 x .08 x 2.4 40	61		*	Screw, HHCS 1/2 NC x 2 GR5
14	5WP484	2	Sleeve, HT .63 x 1.00 x .44	62		*	Nut, Lock 5/8 NC
15	5WP3502	1	Bearing, Ball	63		*	Nut, Lock 3/4 NC
16	-----	1	Housing, Bearing (Not Serviced)	64	5WP11900		Nut, Flanged lock 1/2 NC
17	5WP1251	1	Bearing holder w/bearing (Includes ref. 15, 16, 77, 78)	66	5WP14350		Nut, Flanged lock 3/8 NC
18	5WP44637	1	Shield, Front drive	67		*	Nut, Lock 3/8 NC
19	-----	1	Drive, Yoke & shaft Non-tel 2400 x 26.4 (see page 56)	68	5WP28873		Washer, Flat .75 x 1.50 x .25
20	5WP19407	1	Chain, Safety 6400 lb	69	5WP44640		Washer, Cup 1.04 x 2.25 x .17
21	5WP62440	2	Bumper pad	70	5WP34467		Washer, Flat .63 x 2.00 x .38
22	5WP38264	1	Pin, Lynch chain & cotter asy	71	5WP10635		Washer, Cup .63 x 1.75 x 14 Ga
23	5WP40933	1	Gearbox, 4-Way splitter	72		*	Washer, Flat 3/8 standard
--	5WP58815	2	Seal, Thru shaft 4-way gearbox	73		*	Washer, Flat 1/2 standard
--	5WP58816	2	Seal, Wing shaft 4-way gearbox	74	5WP57811	8	Washer, Flat 1/2 extra thick hrd
--	5WP58817	6	Bearing, Cup & cone 4-way box	75		*	Washer, Lock 3/8
--	5WP1009083	1	Plug, Vent w/Washer	76	5WP1258		Bolt, Wheel 1/2 NF x 1-1/8
24	5WP62626	4	Sleeve, .76 x 1.00 x 1.00	77		*	Grease fitting, 1/4-28 90° Tapered thread
25	5WP44636	1	Shield, Gearbox 4-way	78	5WP12128		Ring, Retaining .06 x 72 MM
26	5WP1001020	2	Asy, Whl hub & axle (See page 46)	79		*	Pin, Spirol 3/8 x 1-1/2
27	5WP38298G	2	Wheel & tire, 20.5 x 8.00 x 10 Gray	80		*	Grease fitting, 1/4-28 Taper thread
--	5WP38475G		Wheel rim, 5-Bolt 8.00 x 10 gray	81		*	Pin, Safety 3/16
28	5WP44625	1	Drive, Cmpl CV 2480, 35.8 x 48.4 (See page 54) -or-	82	5WP62789		Screw, HHCS 1/2 NC x 2 FT GR5
28	5WP1021100	1	Drive, Cmpl CV 35R 35.0 x 47.6 (See page 55)	83		*	Screw, HHCS 1/2 NC x 1-3/4 GR5
29	5WP1023225	1	Drive, Cmpl 40, 26.9 x 43.5 (See page 50)	84	5WP14139		Nut, Flanged lock 5/16 NC
30	5WP58984	2	Pin, Rear wing hinge	85		*	Bolt, Carriage 5/16 NC x 1/2
31	5WP40805	1	Frame, Rear wWing	86	5WP1004251	1	SMV Bracket
32	5WP44638	2	Chain, 16 Link 1/4-proof	87	5WP24611	1	Sign (SMV) Slow moving vehicle
						*	Standard Hardware, Obtain Locally

## FM1012, FM1015 & FM1017 WING FRAME

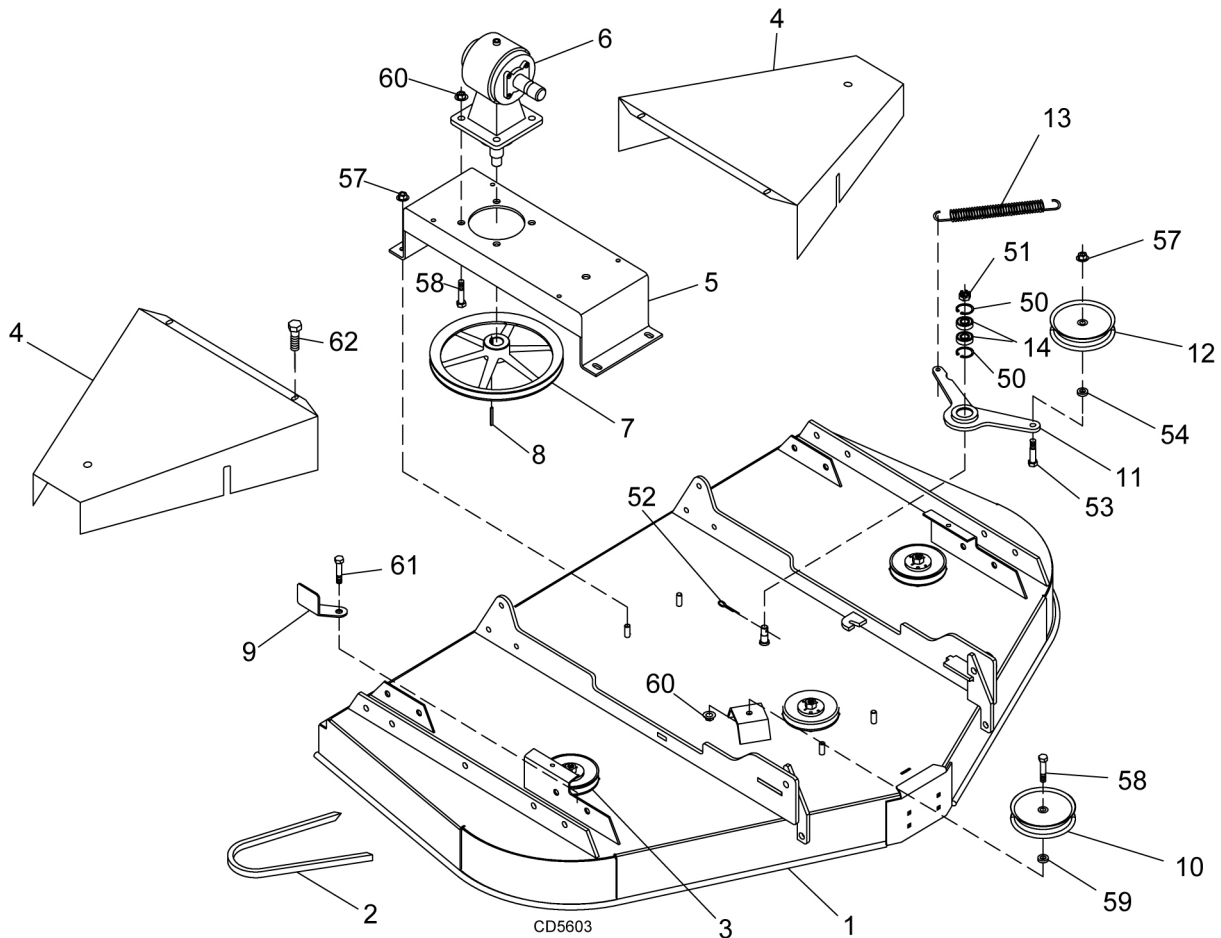


REF	PART	QTY	DESCRIPTION
1	5WP1000610	1	Frame, Right wing (FM1012)
	-or-		
1	5WP1006340	1	Frame, Right wing (FM1015)
	-or-		
1	5WP1000614	1	Frame, Right wing (FM1017)
2	5WP1000611	1	Frame, Left wing (FM1012)
	-or-		
2	5WP1006341	1	Frame, Left wing (FM1015)
	-or-		
2	5WP1000615	1	Frame, Left wing (FM1017)
3	5WP40907	2	Link, Wing deck lift (FM1012)
	-or-		
3	5WP40881	2	Link, Wing deck lift (FM1015, FM1017)

REF	PART	QTY	DESCRIPTION
4	5WP40895	2	Trunnion, Front deck (FM1012, FM1015)
	-or-		
4	5WP40887	2	Trunnion, Front deck (FM1017)
5	5WP40896	2	Trunnion, Rear deck (FM1012, FM1015)
	-or-		
5	5WP40888	2	Trunnion, Rear deck (FM1017)
6	5WP58980	2	Pin, Wing deck link
7	5WP58982	4	Pin, Deck link trunnion
8	*	6	Pin, Safety 3/16
9	5WP71444	2	Rubber bumper
10	5WP14139	2	Nut, Flanged lock 5/16 NC
11	5WP38264	2	Pin, Lynch chain & cotter asy

\* Standard Hardware, Obtain Locally

# **FM1012 CENTER DECK** **FM1015 & FM1017 CENTER & WING DECK ASSEMBLY**



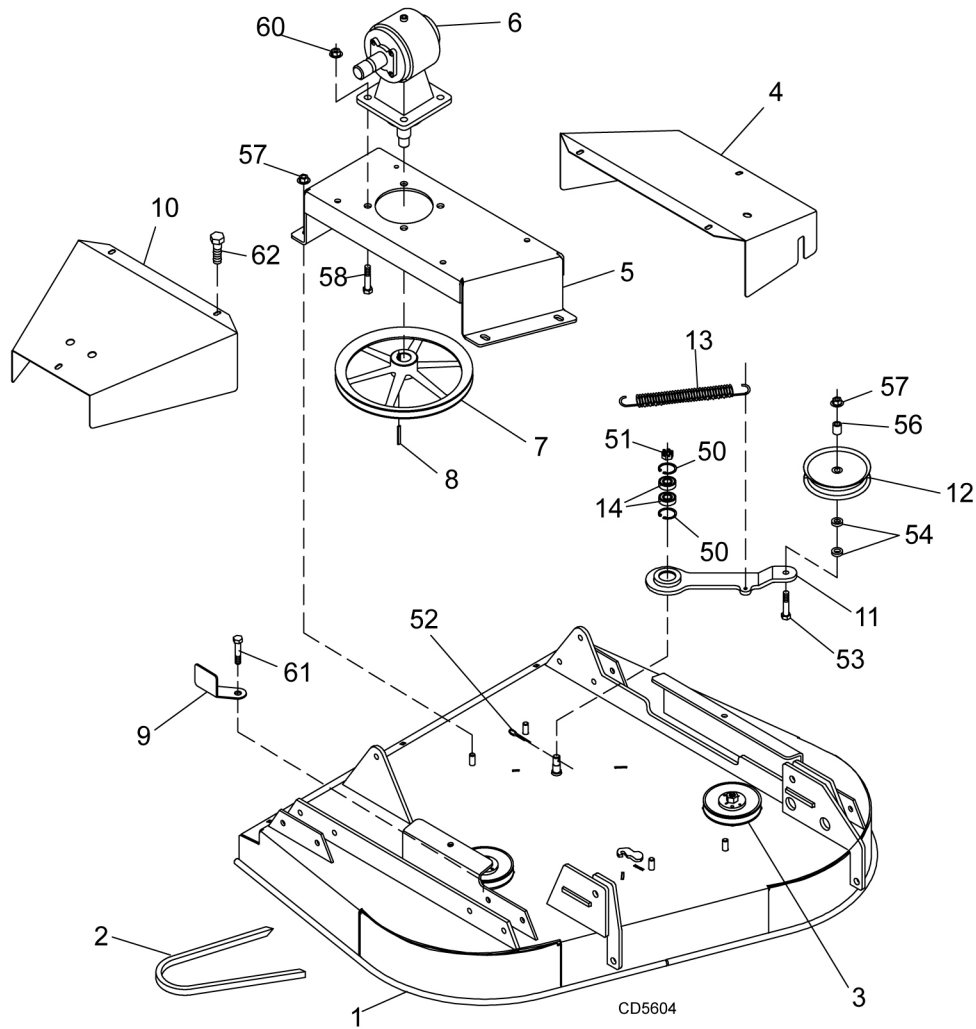
REF	PART	QTY	DESCRIPTION
1	5WP1000618	1	Deck, Weld asy 6 Foot (FM1015 center, FM1017 all) <b>-or-</b>
1	5WP1000617	1	Deck, Weld assembly 5 Foot (FM1012 center, FM1015 wings)
2	5WP18879	1	V-Belt W112 (FM1015 center, FM1017 all) <b>-or-</b>
2	5WP1001244	1	V-Belt W99 (FM1012 center, FM1015 wings)
3		3	CW Spindle asy (See page 48)
4	5WP44635	2	Shield, Belt (FM1015 center, FM1017 all) <b>-or-</b>
4	5WP44634	2	Shield, Belt (FM1012 center, FM1015 wings)
5	5WP53534	1	Gearbox stand
6	5WP1002499	1	Gearbox, 1:1.92 (See page 47)
7	5WP65197	1	Sheave, Offset 12.4 P.D.
8	5WP29792	1	Key, HT 1/4 x 1/4 x 1-1/4
9	5WP53567	1	Guide, Belt 8 Ga formed
10	5WP64555	1	Idler, Flat 5.5 dia.

REF	PART	QTY	DESCRIPTION
11	5WP58989	1	Idler arm assembly
12	5WP53595	1	Idler, Flat 5.0 Dia.
13	5WP67131	1	Spring, Ext .177 x 1.22 x 9.88
14	5WP35193	2	Bearing, Ball
50	5WP35141		Ring, Retaining int .062 x 1.56
51	5WP302178		Nut, Castle 5/8 NF
52	*		Pin, Cotter 3/16 x 1-1/2
53	*		Screw, HHCS 1/2 NC x 2-1/2 GR5
54	*		Washer, Flat 1/2 standard
57	5WP11900		Nut, Flanged lock 1/2 NC
58	5WP19024		Screw, Flngd hex head 5/8 NC x 1-3/4
59	5WP1517		Washer, Flat .63 x 1.38 x 7 Ga
60	5WP19025		Nut, Flanged lock 5/8 NC
61	5WP4358		Screw, HHCS 1/2 NF x 1-1/4 GR5
62	5WP62153		Bolt, Flngd whiz 3/8 NC x 1

\* Standard Hardware, Obtain Locally



## FM1012 WING DECK ASSEMBLY

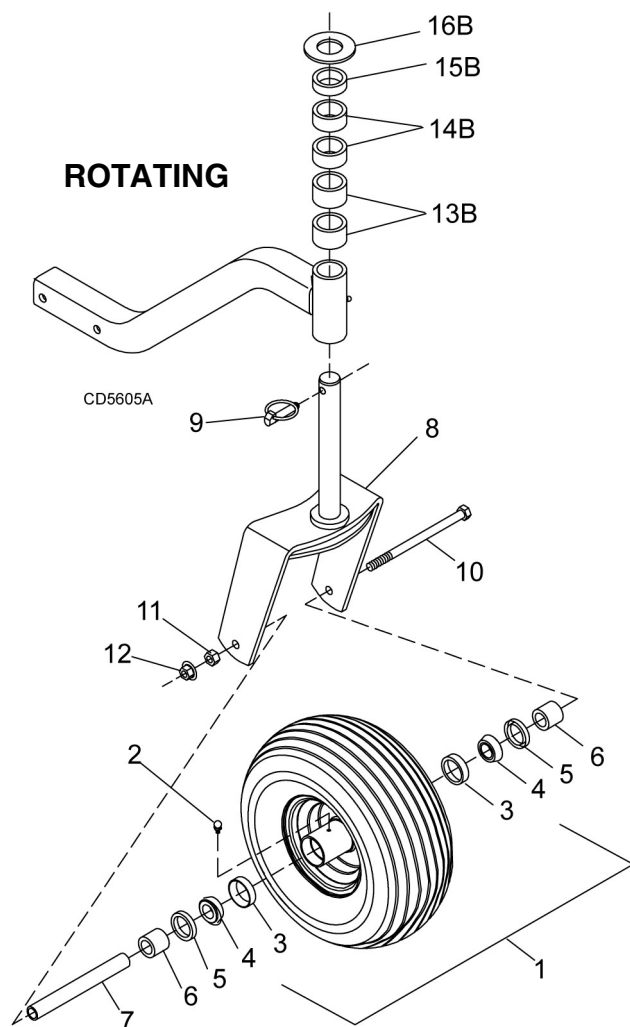


REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	5WP1000609	1	Deck, Weld asy 4 foot left <b>-or-</b>	13	5WP67131	1	Spring, Ext .177 x 1.22 x 9.88
1	5WP1000608	1	Deck, Weld asy 4 foot right (NS)	14	5WP35193	2	Bearing, Ball
2	5WP40930	1	V-Belt, W80	50	5WP35141		Ring, Retaining int .062 x 1.56
3		3	CW Spindle asly (See page 48)	51	5WP302178		Nut, Castle 5/8 NF
4	5WP58953	1	Shield, Belt left <b>-or-</b>	52	*		Pin, Cotter 3/16 x 1-1/2
4	5WP58954	1	Shield, Belt right (NS)	53	*		Screw, HHCS 1/2 NC x 2-1/2 GR5
5	5WP58295	1	Gearbox stand, Left <b>-or-</b>	54	*		Washer, Flat 1/2 standard
5	5WP58294	1	Gearbox stand, Right (NS)	56	5WP52877		Sleeve, .51 x .63 x .64
6	5WP1002499	1	Gearbox, 1:1.92 (See page 47)	57	5WP11900		Nut, Flanged lock 1/2 NC
7	5WP65197	1	Sheave, Offset 12.4 PD	58	5WP19024		Screw, Flngd hex head 5/8 NC x 1-3/4
8	5WP29792	1	Key, HT 1/4 x 1/4 x 1-1/4	60	5WP19025		Nut, Flanged lock 5/8 NC
9	5WP53567	1	Guide, Belt 8 Ga formed	61	5WP4358		Screw, HHCS 1/2 NF x 1-1/4 GR5
10	5WP58952	2	Shield, Belt inner	62	5WP62153		Bolt, Flngd whiz 3/8 NC x 1
11	5WP57939	1	Idler arm assembly				
12	5WP57972	1	Idler, Flat 6.0 Dia				
				NS			Not Shown
				*			Standard Hardware, Obtain Locally

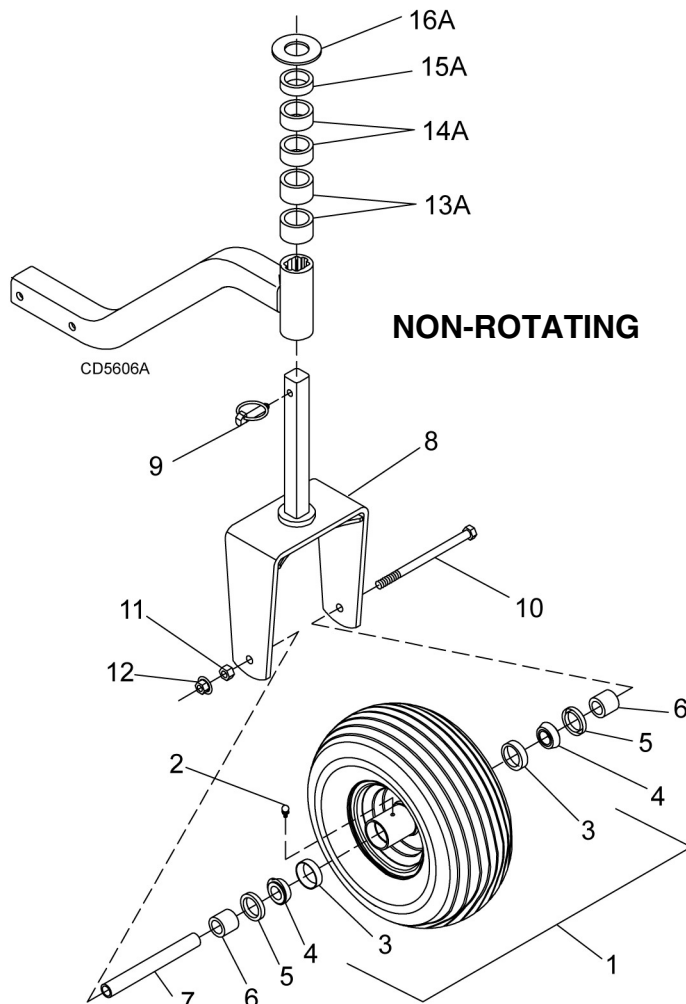
**44 Parts**

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## CASTER WHEELS



REF	PART	QTY	DESCRIPTION
1	5WP38267G	1	Wheel & hub 15.00 x 6.00 x 6 Gray
	5WP38476G		Wheel rim & hub, 6.00 x 6 w/Cups gray
2	*	1	Grease fitting, 1/8 Pipe thread
3	5WP2306	2	Bearing, Cup
4	5WP2304	2	Bearing, Cone
5	5WP5624	2	Seal, 1.13 x 1.78 x .47
6	5WP14318	2	Sleeve, HT .75 x 1.13 x 1.25
7	5WP38111	1	Sleeve, HT .53 x .75 x 6.75
8	5WP58958	1	Caster yoke & shaft asy, Rotating
	-or-	-or-	
8	5WP58961	1	Caster yoke & shaft asy, Non-rotating
9	5WP35124	1	Pin, Klik 7/16 x 2
10	5WP38107	1	Screw, HHCS 1/2 NC x 9 GR5
11	*	1	Nut, Hex 1/2 NC
12	5WP11900	1	Nut, Flanged lock 1/2 NC

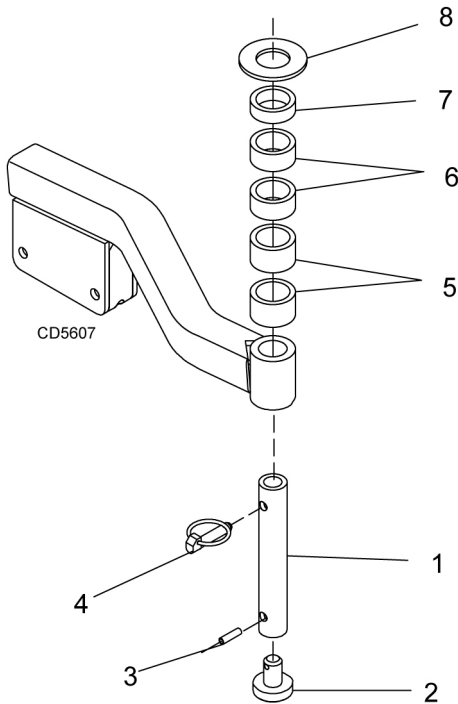


REF	PART	QTY	DESCRIPTION
<b>Non-Rotating:</b>			
13A	5WP58987	2	Sleeve, 1.50 x 1.90 x 1.00
14A	5WP58986	2	Sleeve, 1.50 x 1.90 x .75
15A	5WP58985	1	Sleeve, 1.50 x 1.90 x .50
16A	5WP6237	1	Washer, Flat 1.50 x 2.25 x 13 Ga

<b>Rotating:</b>			
13B	5WP52855	2	Sleeve, 1.25 x 1.90 x 1.00
14B	5WP52854	2	Sleeve, 1.25 x 1.90 x .75
15B	5WP52853	1	Sleeve, 1.25 x 1.90 x .50
16B	5WP7163	1	Washer, Flat 1.25 standard

\* Standard Hardware, Obtain Locally

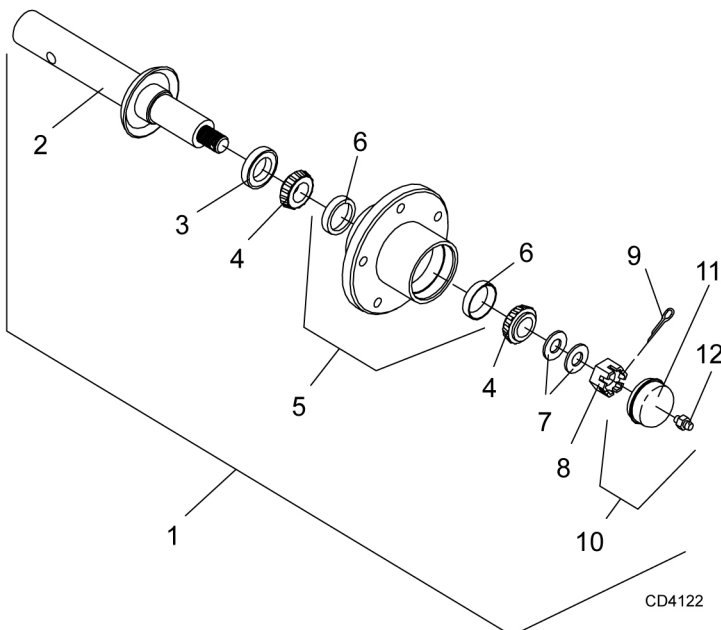
## HEIGHT ADJUSTMENT POST



REF	PART	QTY	DESCRIPTION
1	5WP58998	1	Sleeve, Drld .81 x 1.25 x 8.00
2	5WP58999	1	Wear pad
3	*	1	Pin, Spirol .25 x 1.00
4	5WP35124	1	Pin, Klik 7/16 x 2
5	5WP52855	2	Sleeve, 1.28 x 1.66 x 1.00
6	5WP52854	2	Sleeve, 1.28 x 1.66 x .75
7	5WP52853	1	Sleeve, 1.28 x 1.66 x .50
8	*	1	Washer, Flat 1-1/4 standard

\* Standard Hardware, Obtain Locally

## HUB & AXLE ASSEMBLY



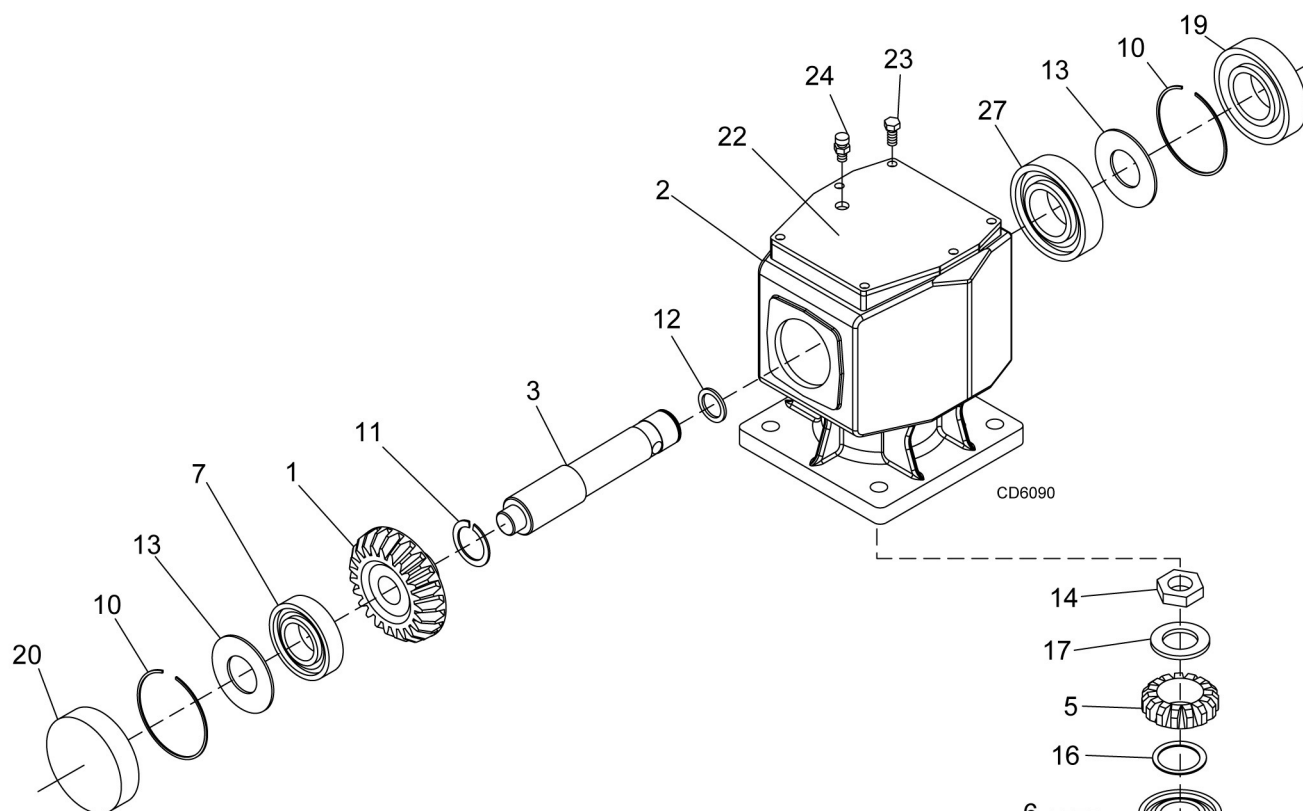
REF	PART	QTY	DESCRIPTION
1	5WP1001020	1	Wheel hub & axle assembly
2	5WP1001021	1	Axle shaft
3	5WP314	1	Seal, 1.50 x 2.44 x .31
4	5WP2303	2	Bearing, Cone
5	5WP38437	1	Wheel hub, Housing w/cups
6	5WP2305	2	Bearing, Cup
7	*	2	Washer, Flat 3/4 standard
8	5WP5849	1	Nut, Slotted hex 3/4 NF
9	*	1	Pin, Cotter 3/16 x 1
10	5WP14133	1	Hub cap, Assembly w/fitting
11	5WP531	1	Hub cap
12	*	1	Grease fitting, 1/4 Tapered thread

\* Standard Hardware, Obtain Locally

**46 Parts**

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## WING GEARBOX ASSEMBLY



REF	PART	QTY	DESCRIPTION
A	5WP1002499	1	Gearbox asy, complete
1	5WP57458	1	Gear crown Z25 M5.3
2	NS	1	Gearbox housing
3	5WP1005320	1	Shaft, Input 1-3/8 -6
4	5WP1005321	1	Shaft, Output 1-1/4
5	5WP57491	1	Pinion gear Z13 M5.3
6	5WP57476	1	Bearing
7	5WP57462	1	Bearing
8	5WP20888	1	Washer, Protective flat
9	*	1	Pin, Cotter 4 x 50
10	5WP57466	2	Snap ring
11	5WP20895	1	Snap ring
12	5WP57373	1	Spacer 35.5 x 48 x 2.5
13	5WP57328	2	Kit, Shim 60.3 x 71.6
14	5WP57468	1	Nut, Castle
15	5WP51946	1	Nut, Castle M24 x 2
16	5WP57328	1	Kit, Shim 30.3 x 44
17	5WP57473	1	Washer, Flat
18	5WP20900	1	Seal, Oil 40 x 80 x 12
19	5WP57463	1	Seal, Oil 35 x 72 x 10
20	5WP57374	1	Cap
21	5WP20897	1	Snap ring

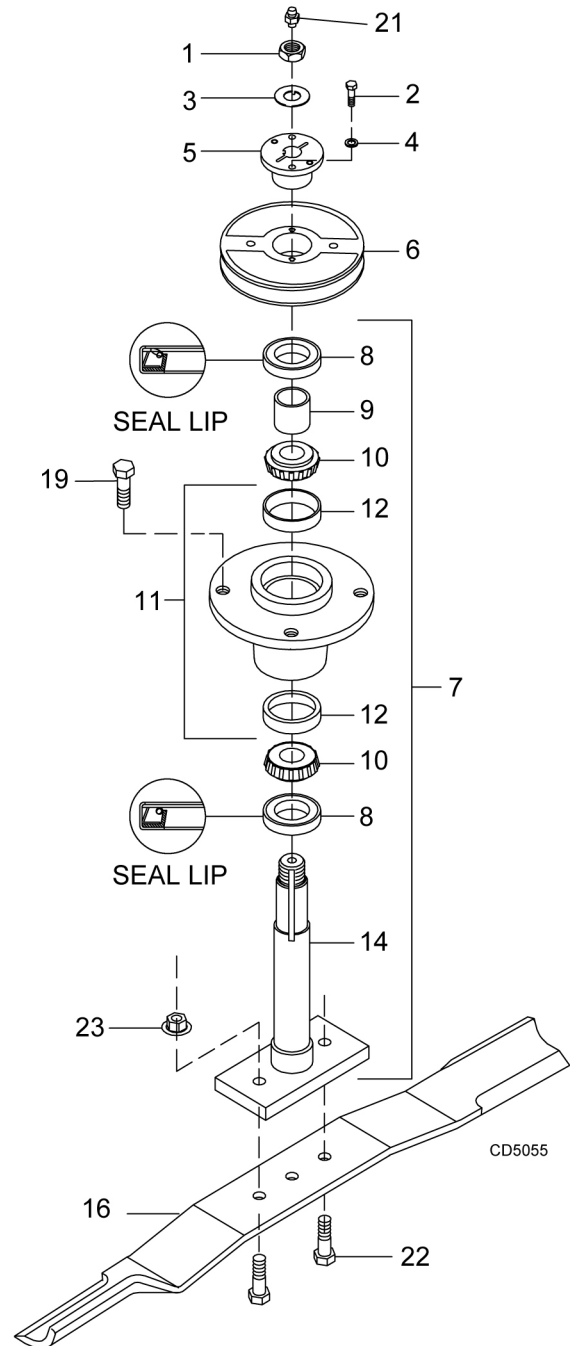
REF	PART	QTY	DESCRIPTION
22	5WP1005322	1	Cover, Top
23	*	6	Bolt 8 mm x 14 mm
24	5WP57076	1	Plug, Breather level
25	*	1	Pin, Cotter 5 x 50
26	5WP57478	1	Bearing
27	5WP20890	1	Bearing, Ball
	NS		Not Serviced
	*		Standard Hardware - Obtain Locally

## BLADE & SPINDLE ASSEMBLY

REF	PART	QTY	DESCRIPTION
1	5WP37009		Nut, Jam 7/8 NF
2	*		Screw HHCS 1/4 NC x 1 GR5
3	5WP52898		Washer, Lock .929 x 1.66
4	*		Washer, Lock 1/4
5	5WP34440		Bushing, H 1 Strt bore w/key
6	5WP12622		Sheave, H 1 BK 5.0 PD (FM1012 wing deck & FM1015 rear deck & FM1017 wWing & rear deck) <b>-or-</b>
6	5WP66694		Sheave, H 1 BK 4.17 PD (FM1012) rear deck, FM1015 wing deck)
7	5WP52881		Spindle assembly complete
8	5WP52949		Seal 1.50 x 2.12 x .31
9	5WP52872		Sleeve 1.14 x 1.50 x .55
10	5WP29899		Bearing, Cone
11	5WP52882		Spindle, Housing with cups
12	5WP29898		Bearing, Cup
14	5WP52852		Shaft, Blade spindle
19	5WP4358		Screw, HHCS 1/2 NF x 1-1/4 GR5
21	*		Grease fitting, 1/4-28 Tapered thread
22	5WP3379		Screw, HHCS 1/2 NC x 1-1/2 GR5
23	5WP11900		Nut, Flanged lock 1/2 NC
	*		Standard Hardware - Obtain Locally

### BLADE KITS

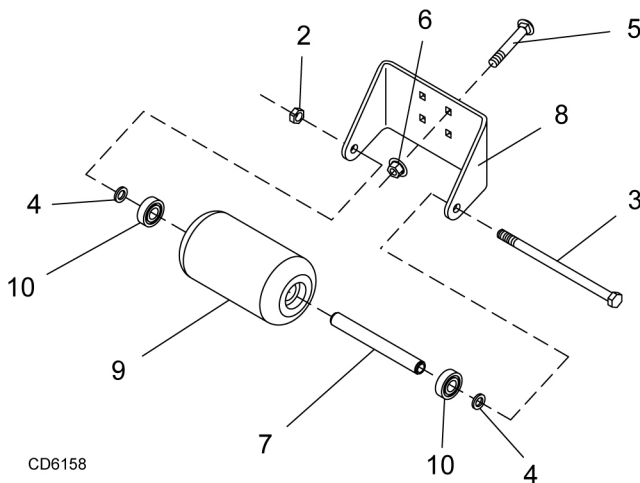
5WP7144BDKT	Blade kit, High Lift FM1012 complete
5WP9180BDKT	Blade kit, High Lift FM1015 complete
5WP9204BDKT	Blade kit, High Lift FM1017 complete
5WP7144BDKT2	Blade kit, Low lift FM1012 complete
5WP9180BDKT2	Blade kit, Low lift FM1015 complete
5WP9204BDKT2	Blade kit, Low lift FM1017 complete
5WP1008199K2	Blade kit, High lift, 48" Decks
5WP1001511K2	Blade kit, Low lift, 48" Decks
5WP1001513KT	Blade kit, High lift, 60" Decks
5WP1001510KT	Blade kit, Low lift, 60" Decks
5WP1008199KT	Blade kit, High lift 72" Decks
5WP1001511KT	Blade kit, Low lift 72" Decks



**48 Parts**

5WPMAN0183 (Rev. 7/9/2008)

## FM1012 CENTER DECK AND FM1015 & FM1017 FRONT ROLLER ASSEMBLY (OPTIONAL)

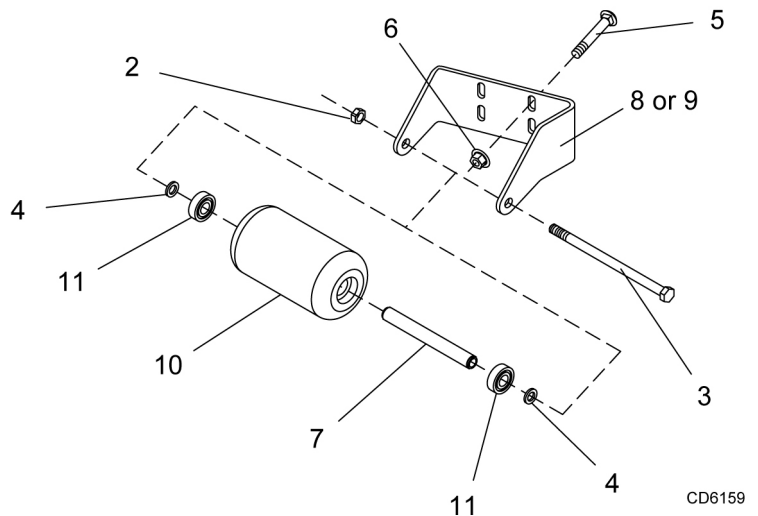


REF	PART	QTY	DESCRIPTION
	5WP1006417	1	Front roller kit, complete
2	*	1	1/2 NC Flanged lock nut
3	5WP38107	1	1/2 NC x 9 Cap screw GR5
4	*	2	1/2 Flat washer SAE
5	*	4	3/8 NC x 1 Carriage bolt
6	5WP70069	4	3/8 NC Flanged whiz nut
7	5WP1006420	1	Spacer, .75 x 6.62
8	5WP1006419	1	Bracket, Front roller
9	5WP1006418	1	Roller, 4 x 7.37
10	5WP35193	2	Bearing

\* Standard Hardware, Obtain Locally

## FM1012 WING DECK ANTI-SCALP ROLLER KIT

REF	PART	QTY	DESCRIPTION
	5WP1006421		Roller kit, Front complete
2	*	1	1/2 NC Flanged lock nut
3	5WP38107	1	1/2 NC x 9 Cap screw GR5
4	*	2	1/2 Flat washer SAE
5	*	4	3/8 NC x 1 Carriage bolt
6	5WP70069	4	3/8 NC Flanged whiz nut
7	5WP1006420	1	Spacer, .75 x 6.62
8	5WP1006422	1	Bracket, Front roller right
9	5WP1006423	1	Bracket, Front roller left
10	5WP1006418	1	Roller, 4 x 7.37
11	5WP35193	2	Bearing



\* Standard Hardware, Obtain Locally

## FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES (COMER)

### FM1012 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP1023226		Drive, Cmpl 40, 21.3 x 32.3
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026987	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026985	1	Outer yoke & tube
15	5WP1026986	1	Inner yoke & tube

### FM1015 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP1023227		Drive, Cmpl 40, 25.6 x 40.9
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026990	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026988	1	Outer yoke & tube
15	5WP1026989	1	Inner yoke & tube

### FM1017 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP1023228		Drive, Cmpl 40, 28.3 x 46.4
1	5WP1026999	1	Complete collar yoke C12
2	5WP36990	1	U-Joint Repair Kit 50
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026998	1	Complete shield
9	NSS	1	Outer half shaft
10	NSS	1	Inner half shaft
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	5WP1026991	1	Outer yoke & tube
15	5WP1026992	1	Inner yoke & tube

### All Rear Wing Drives

REF	PART	QTY	DESCRIPTION
A	5WP1023225		Drive, Cmpl 40, 26.9 x 43.5
1	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
2	5WP38478	1	U-Joint Repair Kit 2300
3	5WP38478	1	U-Joint Repair Kit 2300
4	5WP1001300	1	Complete collar yoke C12 1-3/8 - 6
5	5WP1019442	1	Outer cone fix ring
6	5WP30922	6	Protection fixing screw
7	5WP1019444	1	Inner cone fix ring
8	5WP1026984	1	Complete shield
9	5WP1026978	1	Outer half shaft (includes outer half of item 8)
10	5WP1026979	1	Inner half shaft (includes inner half of item 8)
11	5WP1001340	2	Lock collar repair kit
12	5WP1001306	1	Inner tube yoke
13	5WP1001305	1	Flexible pin
14	NSS	1	Outer yoke & tube
15	NSS	1	Inner yoke & tube

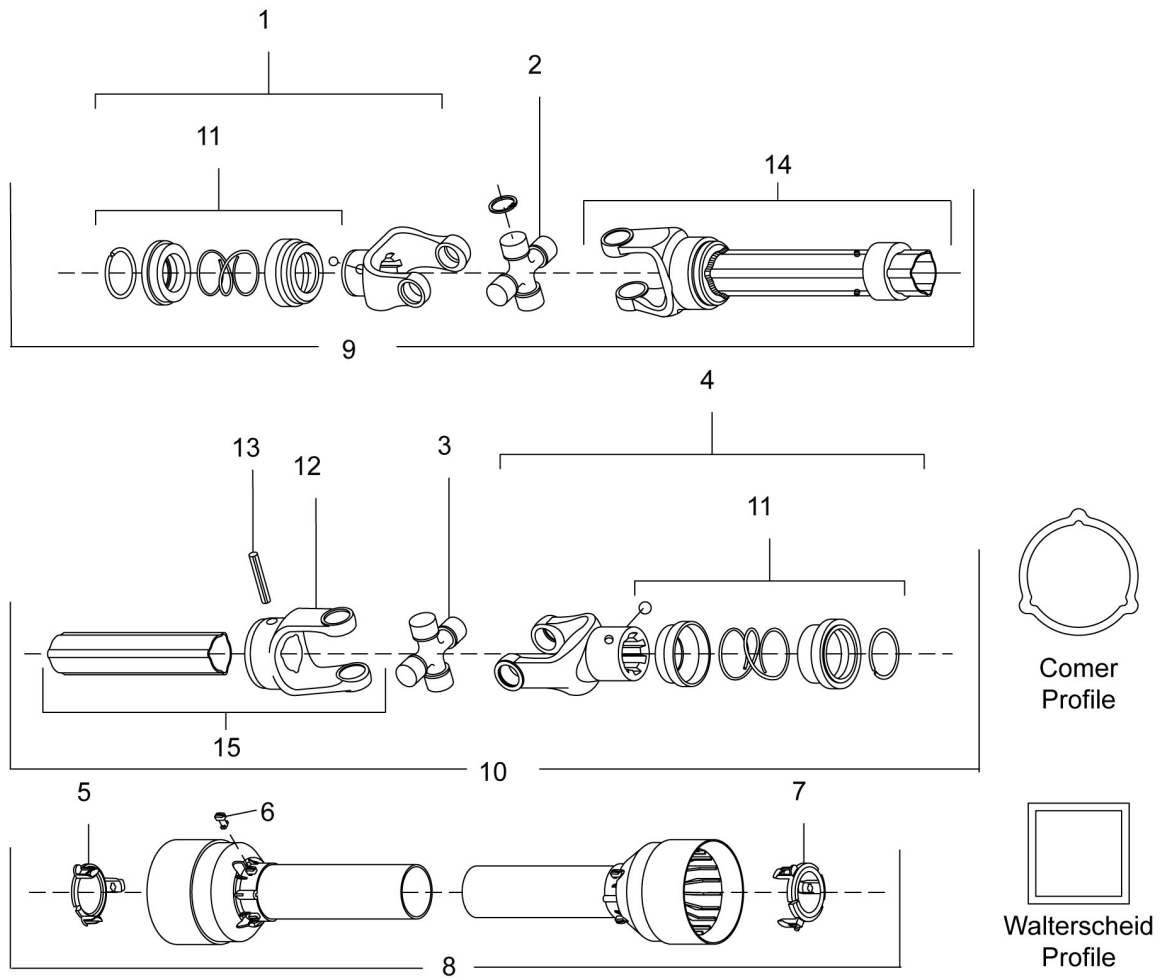
NSS      Not Serviced Separately

**50 Parts**

5WPMAN0183 (Rev. 7/9/2008)



## FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES (COMER)



CD7495

Check profile and order  
from correct parts list.

## FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES (WALTERSCHEID)

### FM1012 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP44628	-	Drive, Compl 2300, 21.7 x 32.6
1	5WP44681	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP38352	1	U-Joint Repair Kit 2400
3	5WP38394	1	Slide Lock Collar Repair Kit
4	5WP40778	2	Screw, Guard Retainer
5	5WP40766	2	Bearing Ring, Guard
6	5WP40777	2	Chain, Guard Anti-Rotation
7	5WP38498	1	Yoke, 1-3/8 - 6 Spline QD
8	5WP38478	1	U-Joint Repair Kit 2300
9	5WP40589	1	Slide Lock Collar Repair Kit
10	5WP44682	1	Yoke & Shaft, Male
11	5WP44693	1	Guard, Outer Half
12	5WP44665	1	Drive, Male Half Complete
13	5WP44683	1	Yoke & Shaft, Female
14	5WP44694	1	Guard, Inner Half
15	5WP44666	1	Drive, Female Half Complete

### FM1015 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP44629	-	Drive, Compl 2300, 26.0 x 41.5
1	5WP44681	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP38352	1	U-Joint Repair Kit 2400
3	5WP38394	1	Slide Lock Collar Repair Kit
4	5WP40778	2	Screw, Guard Retainer
5	5WP40766	2	Bearing Ring, Guard
6	5WP40777	2	Chain, Guard Anti-Rotation
7	5WP38498	1	Yoke, 1-3/8 - 6 Spline QD
8	5WP38478	1	U-Joint Repair Kit 2300
9	5WP40589	1	Slide Lock Collar Repair Kit
10	5WP44684	1	Yoke & Shaft, Male
11	5WP44695	1	Guard, Outer Half
12	5WP44667	1	Drive, Male Half Complete
13	5WP44685	1	Yoke & Shaft, Female
14	5WP44696	1	Guard, Inner Half
15	5WP44668	1	Drive, Female Half Complete

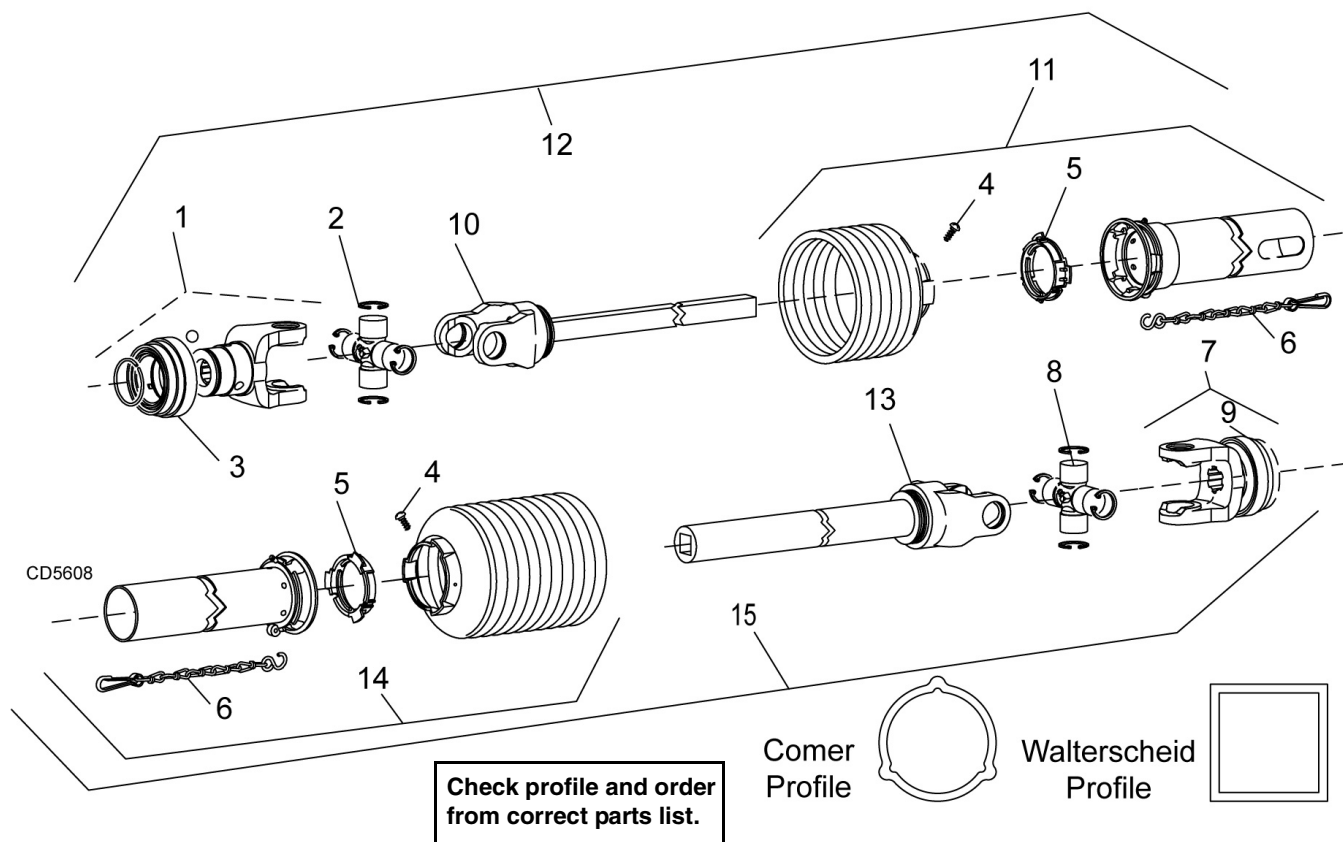
### FM1017 Wing Drive

REF	PART	QTY	DESCRIPTION
A	5WP44630	-	Drive, Compl 2300, 28.7 x 47.0
1	5WP44681	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP38352	1	U-Joint Repair Kit 2400
3	5WP38394	1	Slide Lock Collar Repair Kit
4	5WP40778	2	Screw, Guard Retainer
5	5WP40766	2	Bearing Ring, Guard
6	5WP40777	2	Chain, Guard Anti-Rotation
7	5WP38498	1	Yoke, 1-3/8 - 6 Spline QD
8	5WP38478	1	U-Joint Repair Kit 2300
9	5WP40589	1	Slide Lock Collar Repair Kit
10	5WP44686	1	Yoke & Shaft, Male
11	5WP44697	1	Guard, Outer Half
12	5WP44669	1	Drive, Male Half Complete
13	5WP44687	1	Yoke & Shaft, Female
14	5WP44698	1	Guard, Inner Half
15	5WP44670	1	Drive, Female Half Complete

### All Rear Wing Drives

REF	PART	QTY	DESCRIPTION
A	5WP44627	-	Drive, Compl 2300, 26.8 x 43.3
1	5WP38498	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP38478	1	U-Joint Repair Kit 2300
3	5WP40589	1	Slide Lock Collar Repair Kit
4	5WP40778	2	Screw, Guard Retainer
5	5WP40766	2	Bearing Ring, Guard
6	5WP40777	2	Chain, Guard Anti-Rotation
7	5WP38498	1	Yoke, 1-3/8 - 6 Spline QD
8	5WP38478	1	U-Joint Repair Kit 2300
9	5WP40589	1	Slide Lock Collar Repair Kit
10	5WP44679	1	Yoke & Shaft, Male
11	5WP44691	1	Guard, Outer Half
12	5WP44663	1	Drive, Male Half Complete
13	5WP44680	1	Yoke & Shaft, Female
14	5WP44692	1	Guard, Inner Half
15	5WP44664	1	Drive, Female Half Complete

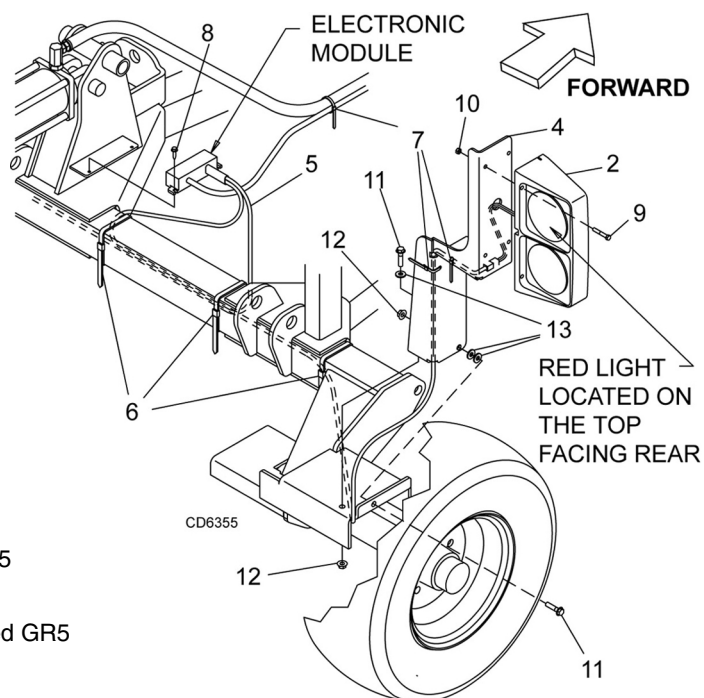
## FM1012, FM1015 & FM1017 REAR & WING DECK DRIVES (WALTERSCHEID)



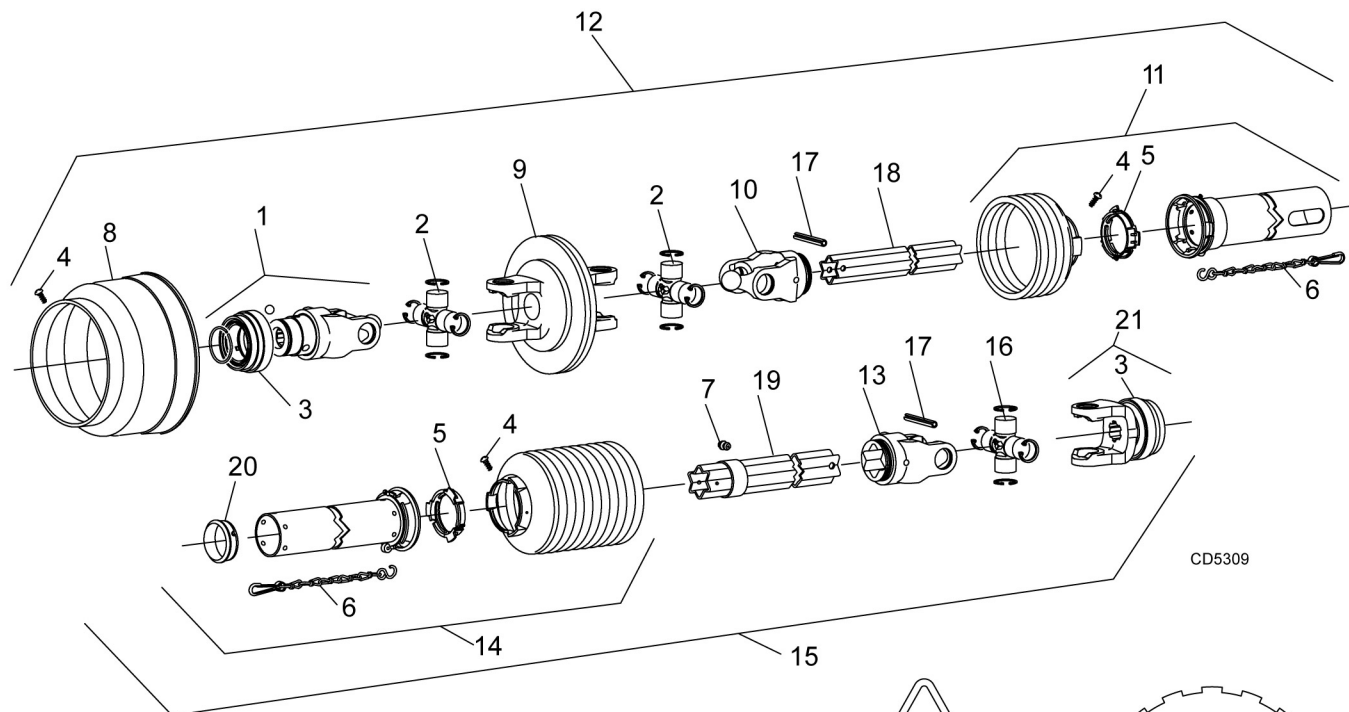
## LIGHTING KIT

REF	PART	QTY	DESCRIPTION
A	5WP1004486	-	Lighting kit
1	5WP90401149	1	Lighting 4 pin LH
2	5WP90401150	1	Lighting 4 pin RH
3	5WP1004481	1	Light bracket LH
4	5WP1004480	1	Light bracket RH
5	5WP1004479	1	Wire harness
6	*	-	356 mm (14 in) Tie strap
7	*	-	178 mm (7 in) Tie strap
8	*	-	#10 x 1/2 Tapping screw
9	*	-	1/4 NC x 1 Hex head cap screw GR5
10	*	-	1/4 NC Lock nut
11	5WP62153	-	3/8 NC x 1 Hex hd cap screw flanged GR5
12	5WP14350	-	3/8 NC Flange lock nut
13	*	-	3/8 Std Flat washer

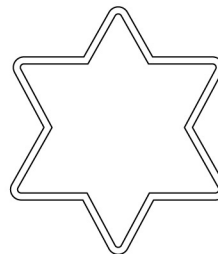
\* Obtain Locally



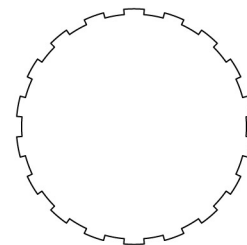
## CV DRIVE ASSEMBLY (WALTERSCHEID PROFILE)



NOTE: EXAMINE THE DRIVELINE PROFILE TO DETERMINE  
THE CORRECT REPAIR PARTS FOR THE UNIT



WALTERSCHEID  
PROFILE  
PAGE 54

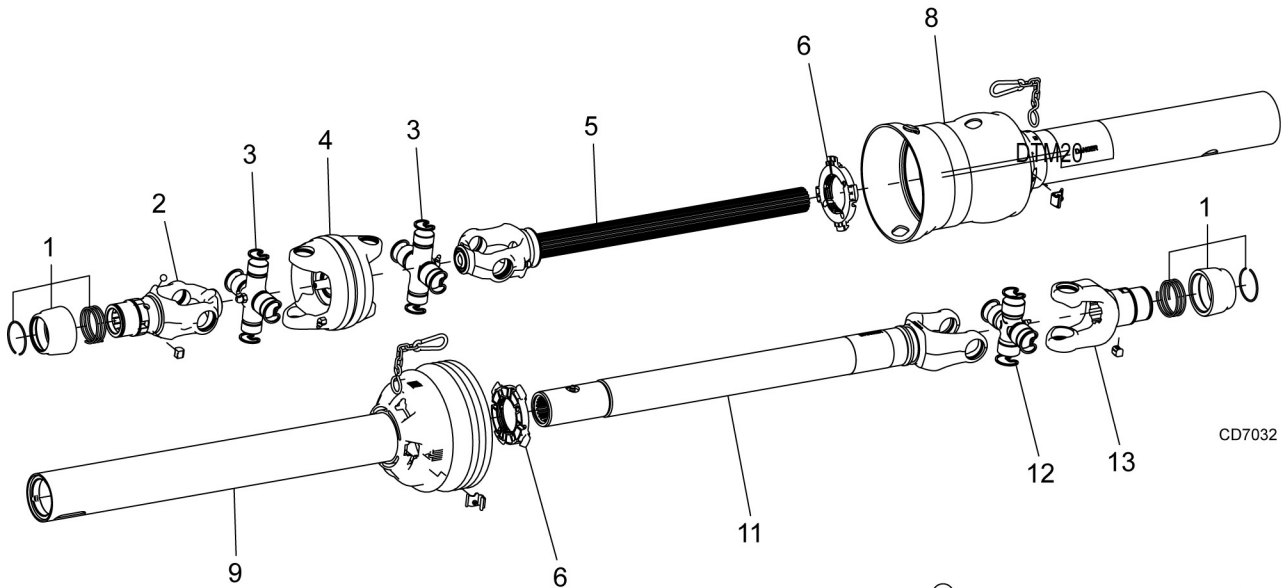


WEASLER  
PROFILE  
PAGE 55

REF	PART	QTY	DESCRIPTION
	5WP44625		Drive, Walterscheid complete CV 2480, 35.8 x 48.4
1	5WP44671	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP44674	1	U-Joint repair kit 2480
3	5WP38394	1	Slide lock collar repair kit
4	5WP40778	2	Screw, Guard retainer
5	5WP40766	2	Bearing ring, Guard
6	5WP40777	1	Chain, Guard anti-rotation
7	5WP40779	1	Grease fitting, Drive line
8	5WP44699	1	Shield, CV Cone & bearing
9	5WP44672	1	CV Body
10	5WP44673	1	Yoke, Inner profile

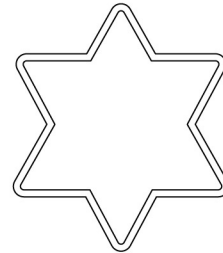
REF	PART	QTY	DESCRIPTION
11	5WP44688	1	Guard, Outer half
12	5WP44661	1	Drive, Inner half complete
13	5WP44677	1	Yoke, Outer profile
14	5WP44689	1	Guard, Inner half
15	5WP44662	1	Drive, Outer half complete
16	5WP38352	1	U-Joint repair kit 2400
17	5WP40764	2	Pin, Spring 10mm x 80mm
18	5WP44675	1	Drive tube, Inner profile
19	5WP44676	1	Drive tube, Outer profile
20	5WP40767	1	Bearing, Guard support
21	5WP38351	1	Yoke, 1-3/8 - 6 Spline QD

## CV DRIVE ASSEMBLY (WEASLER PROFILE)

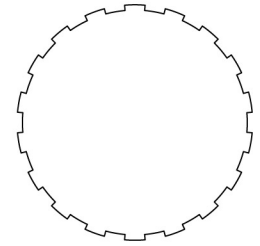


NOTE: EXAMINE THE DRIVELINE PROFILE TO DETERMINE  
THE CORRECT REPAIR PARTS FOR THE UNIT

ITEMS 7 & 10 NOT SHOWN



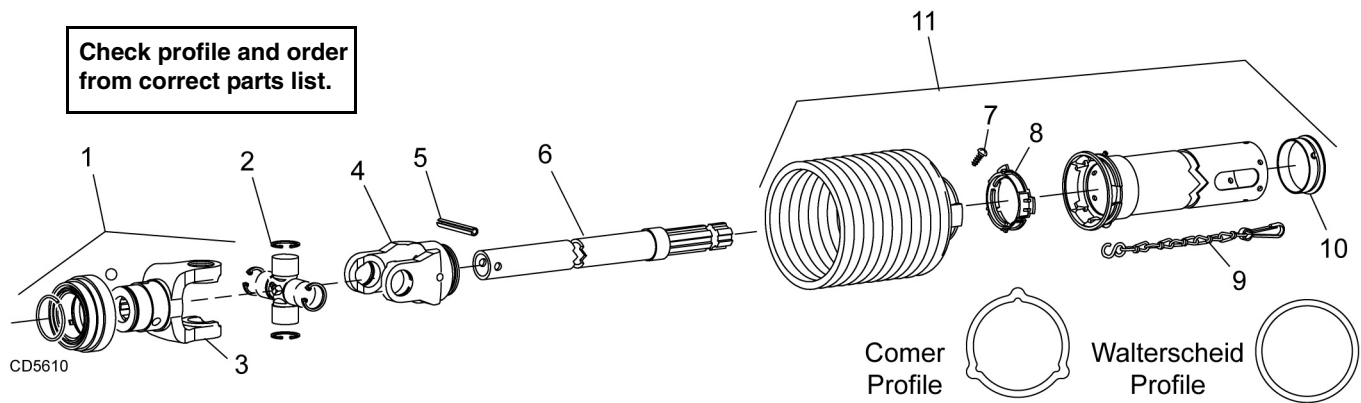
WALTERSCHEID  
PROFILE  
PAGE 54



WEASLER  
PROFILE  
PAGE 55

REF	PART	QTY	DESCRIPTION
A	5WP1021100	1	Drive, Weasler complete CV 35R, 35.0 x 47.6
1	5WP19851	2	Slide lock repair kit
2	5WP1021301	1	Yoke QD CV 1-3/8 - 6
3	5WP52520	2	U-Joint repair kit 35CV
4	5WP52522	1	CV Body w/fitting
5	5WP1021321	1	Yoke and shaft - CV splined 20.9
6	5WP1024636	2	Drive shaft bearing kit
7	5WP18864	1	Decal, danger rotating driveline
8	5WP1021302	1	Outer shield CV
9	5WP1021303	1	Inner shield CV
10	5WP33347	1	Decal, danger guard missing
11	5WP1021304	1	Yoke and tube 35R x 27.5 x 1.31 - 20
12	5WP110	1	Universal joint repair kit 35N
13	5WP55143	1	Yoke QD 36 1-3/8 - 6

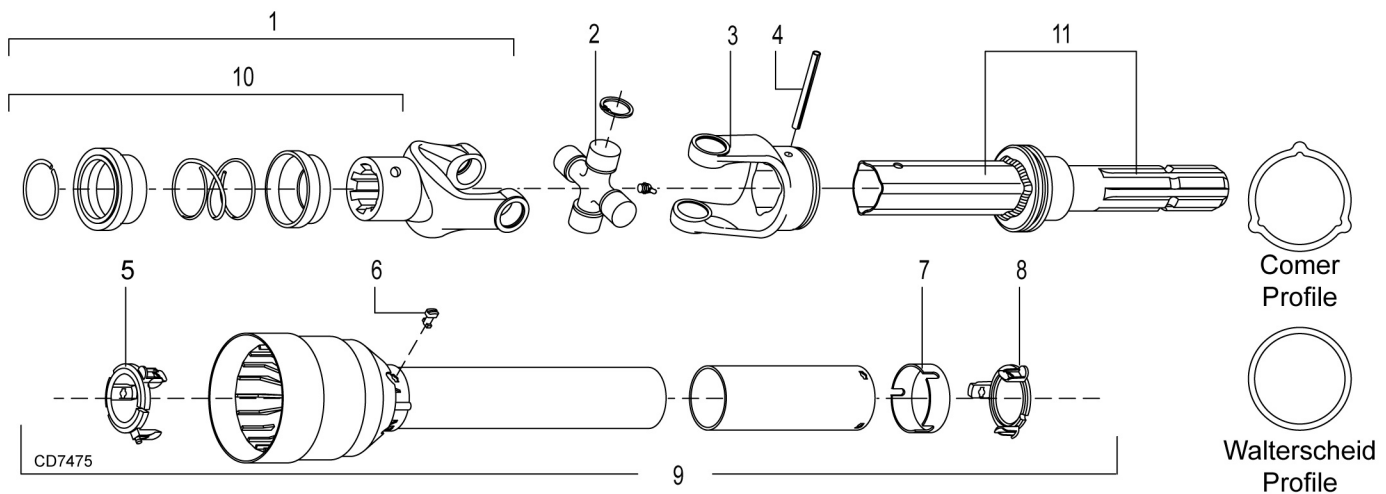
## FM1012, FM1015 & FM1017 JACKSHAFT DRIVE ASSEMBLY (WALTERSCHEID)



REF	PART	QTY	DESCRIPTION
A	5WP44626		Drive, Yk & shft non-tel 2400 x 26.4
1	5WP38351	1	Yoke, 1-3/8 - 6 Spline QD
2	5WP38352	1	U-Joint repair kit 2400
3	5WP38394	1	Slide lock collar repair Kit
4	5WP38353	1	Yoke, Inboard
5	5WP40764	1	Pin, Spring 10mm x 80mm

REF	PART	QTY	DESCRIPTION
6	5WP44678	1	Shaft, Stub 1-3/8 - 6 x 26.38
7	5WP40778	1	Screw, Guard retainer
8	5WP40766	1	Bearing ring, Guard
9	5WP40777	1	Chain, Guard anti-rotation
10	5WP40767	1	Bearing, Guard support
11	5WP44690	1	Guard, Inner half

## FM1012, FM1015 & FM1017 JACKSHAFT DRIVE ASSEMBLY (COMER)



REF	PART	QTY	DESCRIPTION
A	5WP1011759		Complete jackshaft drive asy
1	5WP1028775	1	Complete collar yoke
2	5WP36990	1	U-Joint repair kit
3	5WP1011756	1	Yoke, outer
4	5WP1001330	1	Flexible pin
5	5WP1028776	1	Outer bearing ring

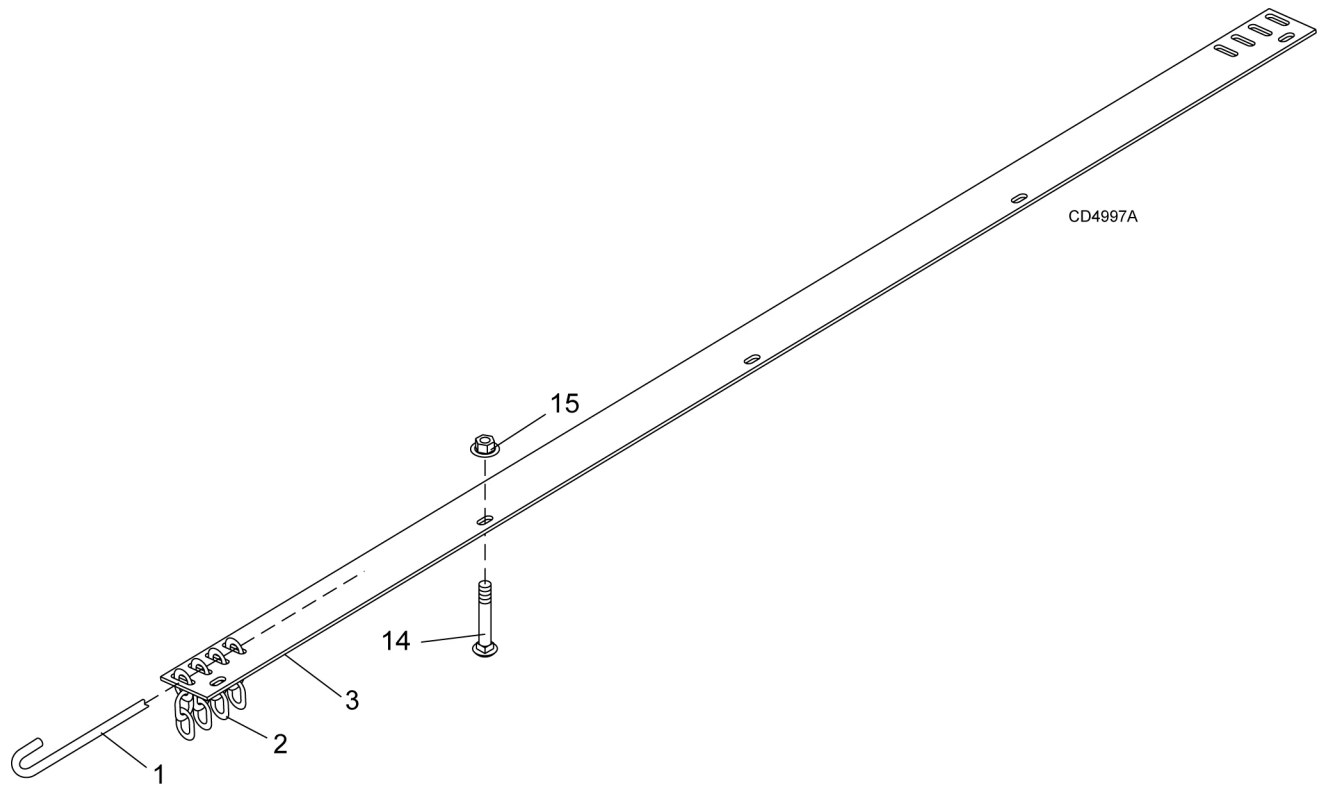
REF	PART	QTY	DESCRIPTION
6	5WP30922	6	Retainer, shield
7	5WP1011757	1	Centering ring
8	5WP1011755	1	Inner bearing ring
9	5WP1011754	1	Shield, complete (includes 5, 6, 7 & 8)
10	5WP1001340	1	Lock collar repair kit
11	NSS	1	Jackshaft

NSS Not Serviced Separately

**56 Parts**

5WPMAN0183 (Rev. 7/9/2008)

## REAR CHAIN SHIELDING ASSEMBLY



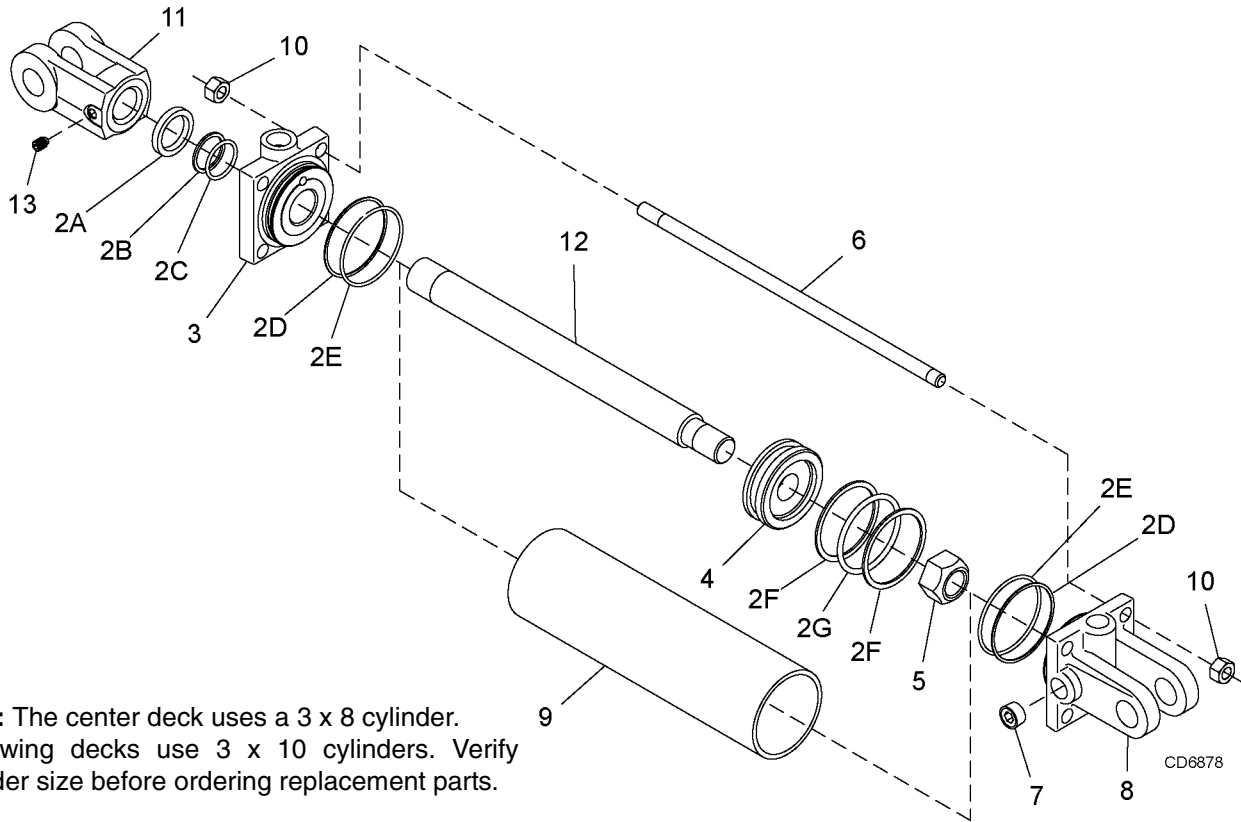
REF	PART	QTY	DESCRIPTION
-	5WP55348		Chain shield assembly, 5 ft. deck
-	5WP53566		Chain shield assembly, 6 ft. deck
-	†		Chain shield assembly, 4 ft. deck
1	5WP1007854	1	Pin, 40 to 42 chains (5 ft) <b>-or-</b>
1	5WP1007856	1	Pin, 52 to 54 chains (6 ft) <b>-or-</b>
1	5WP1007850	1	Pin, 31 to 33 chains (4 ft)
2	5WP4763	-	Chain, 3 link, 1/4 Proof (use 54 for 5 ft; 66 for 6 ft, 41 for 4 ft)
3	5WP55345	1	Shield, Chain plate (5 ft) <b>-or-</b>
3	5WP53554	1	Shield, Chain plate (6 ft) <b>-or-</b>
3	5WP58997	1	Shield, Chain plate (4 ft)
14	*		Bolt, Carriage 3/8 NC x 1
15	5WP14350		Nut, Flanged lock 3/8 NC

\* Standard Hardware, Obtain Locally

† No longer sold as a complete assembly: Order separately:  
1 of 5WP58997, 1 of 5WP1007850, 3 of 5WP14350, 41 of  
5WP4763, and obtain locally 3 Carriage bolts 3/8 NC x 1"



## HYDRAULIC CYLINDERS

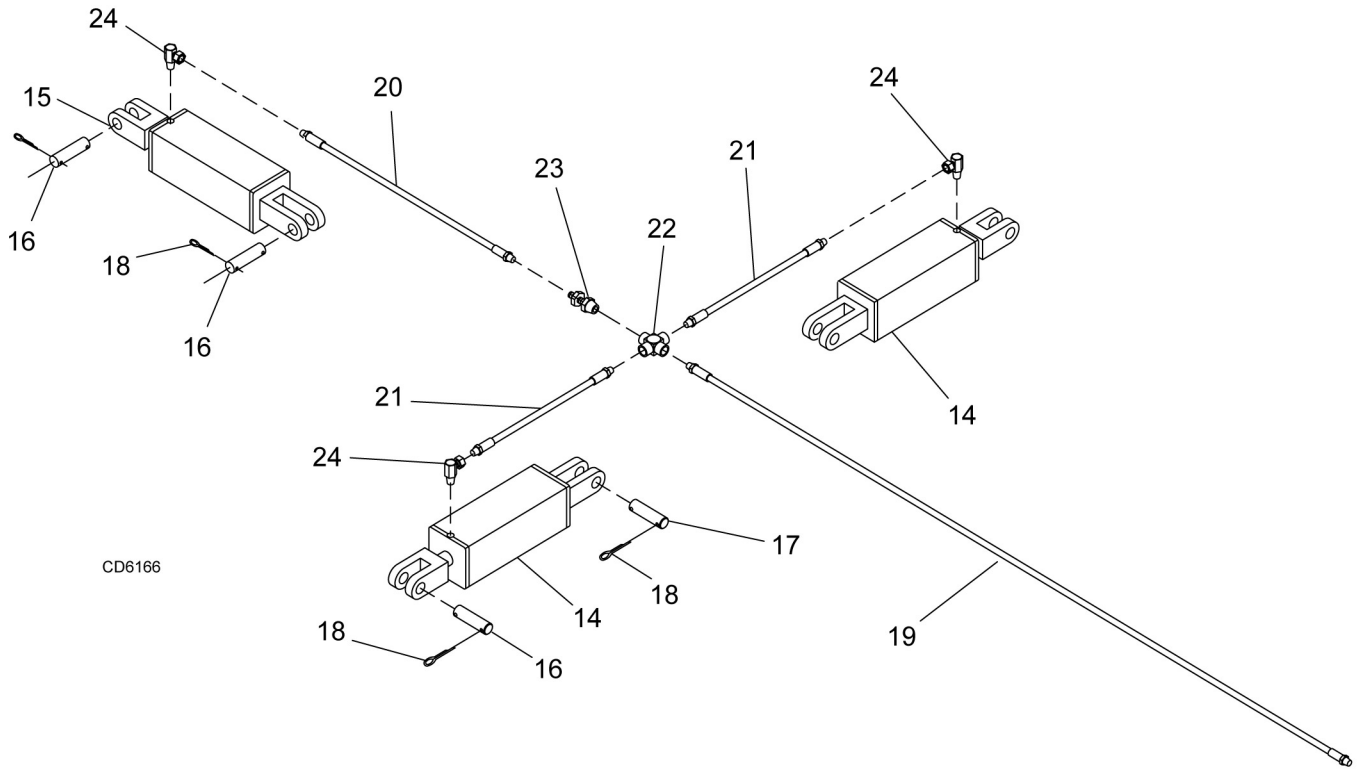


**Note:** The center deck uses a 3 x 8 cylinder.  
The wing decks use 3 x 10 cylinders. Verify cylinder size before ordering replacement parts.

REF	3 x 8 PART	3 x 10 PART	QTY	DESCRIPTION
1	5WP29547	5WP1019460		Complete cylinder
2	5WP19810	5WP19810	1	Seal repair kit (includes items 2A - 2G)
2A	†	†	1	Wiper seal
2B	†	†	1	Rod seal
2C	†	†	1	Rod O-ring
2D	†	†	2	Cap seal
2E	†	†	2	Cap O-ring
2F	†	†	2	Piston seal
2G	†	†	1	Piston O-ring
3	N/S	N/S	1	Cylinder housing - rod end
4	N/S	N/S	1	Piston
5	N/S	N/S	1	Jam nut
6	N/S	N/S	4	Cylinder tie rod
7	*	*	3	1/2 Pipe plug
8	N/S	N/S	1	Cylinder housing - butt end
9	N/S	N/S	2	Cylinder barrel
10	N/S	N/S	8	Tie rod nut
11	N/S	N/S	1	Cylinder clevis
12	N/S	N/S	1	Cylinder rod
13	*	*	1	Set screw 3/8 x 3/4 dog point

† Included in seal kit  
\* Standard hardware, obtain locally  
N/S Not serviced

## HYDRAULIC HOSE ASSEMBLY



REF	PART	QTY	DESCRIPTION
14	5WP1019460	2	Cylinder, Hydraulic 3 x 10 (See pg 58)
15	5WP29547	1	Cylinder, Hydraulic 3 x 8 (See pg 58)
16	5WP8346	4	Pin, Headless 1.00 x 4.58
17	5WP1631	2	Pin, Headless 1.00 x 3.63
18	*		Pin, Cotter 1/4 x 1-3/4
19	5WP1006404	1	Hose, 108" x 9/16 JICF x 1/4 NPTM
20	5WP1006403	1	Hose, 48" x 9/16 JICF x 9/16 JICM
21	5WP1006402	3	Hose, 33" x 9/16 JICF x 9/16 JICM
22	5WP1006401	1	Cross, 9/16 JICM x 1/4 NPTF
23	5WP1006400	1	Bulkhead fitting, 9/16 JICM x 1/4 NPTM
24	5WP1006405	3	Elbow, 9/16 JICF x 1/2 NPTM 90° 3/32 RSTR

\* Standard Hardware, Obtain Locally

# BOLT TORQUE CHART

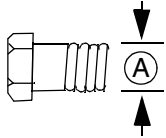
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.



## SAE SERIES TORQUE CHART



**SAE Grade 2  
(No Dashes)**

SAE Bolt Head  
Identification

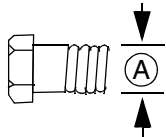


**SAE Grade 5  
(3 Radial Dashes)**



**SAE Grade 8  
(6 Radial Dashes)**

Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



## METRIC SERIES TORQUE CHART



**Metric  
Grade 8.8**

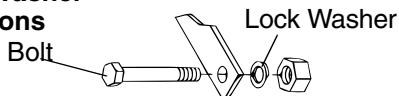
Metric Bolt Head  
Identification



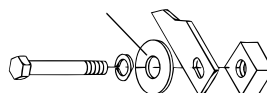
**Metric  
Grade 10.9**

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	Coarse Thread				Fine Thread				Ⓐ Diameter & Thread Pitch (Millimeters)
		Marking on Head				Marking on Head				
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

### Typical Washer Installations



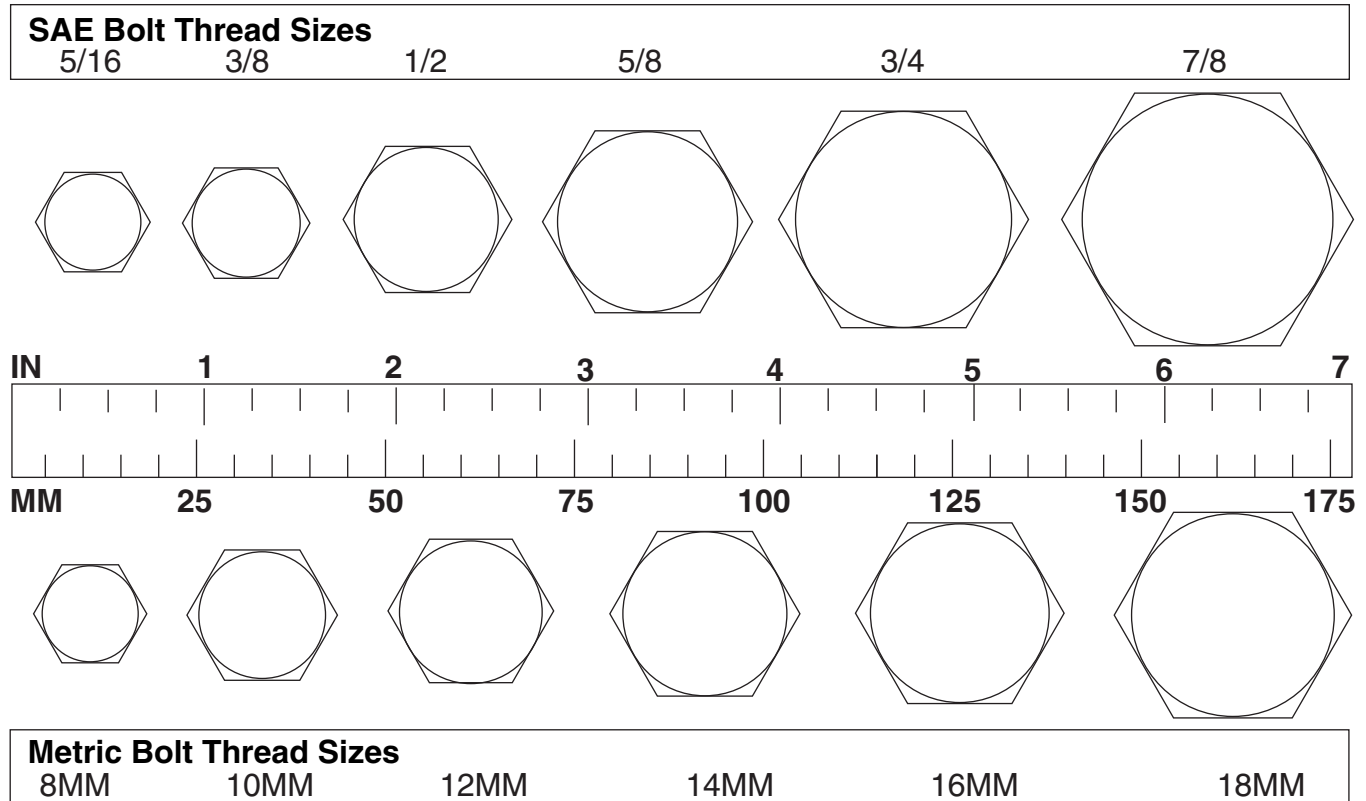
### Flat Washer



8/9/00

# BOLT SIZE CHART

**NOTE:** Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



## ABBREVIATIONS

AG ..... Agriculture  
 ASABE..... American Society of Agricultural & Biological Engineers (formerly ASAE)  
 ASAE ..... American Society of Agricultural Engineers  
 ATF ..... Automatic Transmission Fluid  
 BSPP ..... British Standard Pipe Parallel  
 BSPTM ..... British Standard Pipe Tapered Male  
 CV ..... Constant Velocity  
 CCW ..... Counter-Clockwise  
 CW ..... Clockwise  
 F ..... Female  
 FT ..... Full Thread  
 GA ..... Gauge  
 GR (5, etc.) ..... Grade (5, etc.)  
 HHCS ..... Hex Head Cap Screw  
 HT ..... Heat-Treated  
 JIC ..... Joint Industry Council 37° Degree Flare  
 LH ..... Left Hand  
 LT ..... Left  
 m ..... Meter  
 mm ..... Millimeter  
 M ..... Male

MPa ..... Mega Pascal  
 N ..... Newton  
 NC ..... National Coarse  
 NF ..... National Fine  
 NPSM ..... National Pipe Straight Mechanical  
 NPT ..... National Pipe Tapered  
 NPT SWF ..... National Pipe Tapered Swivel Female  
 ORBM ..... O-Ring Boss - Male  
 P ..... Pitch  
 PBY ..... Power-Beyond  
 psi ..... Pounds per Square Inch  
 PTO ..... Power Take Off  
 QD ..... Quick Disconnect  
 RH ..... Right Hand  
 ROPS ..... Roll-Over Protective Structure  
 RPM ..... Revolutions Per Minute  
 RT ..... Right  
 SAE ..... Society of Automotive Engineers  
 UNC ..... Unified Coarse  
 UNF ..... Unified Fine  
 UNS ..... Unified Special

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# NOTES



## WARRANTY

Please enter information below and save for future reference.

Date Purchased: \_\_\_\_\_

From (Dealer): \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

The warranty periods for certain components are listed below:

Model No.	Part Warranted	Duration
GM1060, GM1072, GM1084, FM1012, FM1015, FM1017 and GM1190	Gearbox components	5 years from the date of delivery to the original purchaser
	Blade spindles	3 years from the date of delivery to the original purchaser
GM3054, GM3060, GM3072	Gearbox components	3 years from the date of delivery to the original purchaser (1 year if used in rental or commercial applications)

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than WOODS, a WOODS authorized dealer or distributor, and/or a WOODS authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through WOODS.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by WOODS. Warranties for these items, if any, are provided separately by their respective manufacturers.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

**WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory.** Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

For warranty services contact your selling dealer.





## WARRANTY for Replacement Parts

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the product to the original purchaser with the exception of V-belts, which will be free of defect in material and workmanship for a period of 12 months.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

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This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, service person, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

For warranty services contact your selling dealer.

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**PART NUMBER**

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